

Uses and Designations of the Forest

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Heritage Resources

Introduction

A series of federal laws mandate that the impact of federally funded or permitted activities on historic properties, also referred to here as heritage resources, and the protection of these properties, be considered prior to the initiation of management activities or undertakings. The value of historic properties on national forests are derived from the public's recognition, beginning early in the twentieth century, that these nonrenewable resources are important and should be protected. Through these laws, the public commemorates that past by recognizing specific places where activities and events occurred.

Legal and Administrative Framework

- Numerous laws, regulations and Forest Service policies direct the inventory, protection, restoration, and interpretation of heritage resources. These include the **National Historic Preservation Act**, the **National Environmental Policy Act**, the **National Forest Management Act**, the **Alaska Native Claims Settlement Act**, the **Archaeological Resources Protection Act**, the **Native American Graves Protection and Repatriation Act**, the **American Indian Religious Freedom Act**, **36 CFR 800**, **FSM 2300**, and **Programmatic Agreement #95-MOU-10-029** between the Alaska Region of the Forest Service, the Advisory Council on Historic Preservation, and the Alaska State Historic Preservation Officer.

Key Indicators

- Number of acres inventoried
- Historic properties documented
- Historic properties monitored
- Number of historic properties located and evaluated for eligibility to the National Register of Historic Places
- Historic properties interpreted
- Historic properties preserved or protected

Resource Protection Measures

The National Historic Preservation Act (NHPA) protects historic properties. When an undertaking, as defined in 36 CFR 800, is begun, all historic properties are to be located and evaluated for their potential to be placed on the National Register of Historic Places. Those sites determined to be eligible for the Register are identified, whether pre- or post-European contact in age, as "historic properties." The State Historic Preservation Office (SHPO), Advisory Council on Historic Preservation (ACHP), Native Alaskan organizations and interested public

must be informed of potential effects to any historic property. Agreement on mitigation of effects to all historic properties must be reached through consultation with SHPO and the ACHP before any project may take place.

Affected Environment

Forestwide

The total extent of the heritage resource base on the Chugach National Forest is unknown, as only less than two percent of the Forest has been intensively surveyed. Two types of areas require more intensive historic properties inventory.

- Although the majority of the inventory on the Forest has taken place along the modern and historic road corridors and trail systems on the Kenai Peninsula and near Cordova and along the shoreline within Prince William Sound, there are still areas within ¼ mile of these much-used corridors and shorelines that have not yet been inventoried.
- Over 90 percent of Chugach National Forest lands are more than ¼ mile from trail systems, roads, or river and marine shorelines reachable by boat, and have not been inventoried for historic properties.

As of December 1999, heritage resource inventories have recorded 1,048 individual historic properties on the Forest. Most Forest heritage resource surveys were conducted for planned timber sales, mining plans of operation, recreation development, easements, and wildlife and fisheries projects. The historic properties survey of western Prince William Sound shorelines after the *Exxon Valdez* oil spill in 1989 resulted from an unplanned occurrence, and represents the Forest response to an unforeseen crisis.

Prehistoric/Native Alaskan Resources

Kenai Peninsula

The portion of the Chugach National Forest on the Kenai Peninsula includes both the inland Kenai River drainage, from the vicinity of the mouth of the Russian River upstream to the Kenai River headwaters and associated drainages, and the head of Turnagain Arm and associated watershed areas. This area has been used by Estuarine/Riverine-adapted people from early Holocene times to the present.

Early to mid-Holocene (10,000 to 3,000 years ago)

Although little is known about the settlement and subsistence patterns of the inhabitants of the Kenai Peninsula during this period, their presence is evidenced at sites near the Russian River, Quartz Creek, and Paradise Lake. Stone tool remains show a technological progression from core and blade industries to flaked stone industries with stemmed points, and shouldered knives. A lack of radiocarbon dates for these sites results in occupation ages being inferred by association with similar dated sites in other parts of southern Alaska (Reger 1998).

Riverine Kachemak (3,000 to 1,000 years ago)

The Kenai River basin was inhabited on a year-round basis by people related to marine-adapted groups of the Gulf of Alaska coast, beginning about 900 BC and continuing to about AD 1000. Reliance on netted salmon is believed to have been a major subsistence strategy of these residents. Both chipped and ground stone tools, and notched stones are common implements from this period. Houses were generally single semi-subterranean rooms with paved hearths (Reger 1998).

Late Prehistoric (1,000 to 225 years ago)

Numerous sites on the Kenai Peninsula date from the period between about AD 1000 and European contact in the eighteenth century. The technology of this period includes beaten copper implements, ground stone adzes, chisels and knives, and bone tools, including barbed points. Multi-roomed semi-subterranean houses with entry tunnels are common, associated with cache pits outside the house (Reger 1998).

Prince William Sound/Copper River Delta

Maritime-adapted people inhabited the islands and mainland shores of Prince William Sound and the Copper River Delta area for thousands of years.

Uqciuvit phase (4,000 to 2,500 years ago)

The earliest evidence of inhabitants in this part of the Forest is from two sites; one on the northwest mainland coast of the sound, and the other on Eleanor Island in the western part of the sound. Radiocarbon dates place inhabitants in this area about 4,000 years ago (Haggarty et al. 1991, Yarborough and Yarborough 1996, 1998, Yarborough 2000). Subsistence was marine oriented and technology included ground stone tools. The culture of the inhabitants bears similarities to the Ocean Bay culture phase of southern Cook Inlet and Kodiak, to the southwest. Although occupation at the mainland site appears to have been interrupted for about 700 years, possibly in association with an early Neoglacial ice advance, evidence from the site on Eleanor Island indicates continuation of habitation in other parts of Prince William Sound. Related geomorphological studies suggest that shorelines during this period of the Holocene and earlier, along which inhabitants would have lived, may be significantly different from today's shorelines.

Palugvik phase (2,500 to 1,000 years ago)

The culture of the inhabitants of the sound and north Gulf coast between about 2,500 years ago and 1,000 years ago was similar to the Kachemak phase evident in coastal communities to the west on Kodiak Island, around Cook Inlet, and along the Kenai River (Yarborough and Yarborough 1996, 1998). Cultural markers of this phase include semi-subterranean houses and a marked shift in the abundance of fire-cracked rock, but the small number of Uqciuvit phase artifacts makes technological distinctions between Uqciuvit and Palugvik phases difficult. Studies of archeofauna from this period indicate that both fish and marine mammals were important subsistence items (Yarborough 2000).

Chugach phase (1,000 to 225 years ago)

The artifact assemblages from sites of the late prehistoric period are characterized by the loss of some types of ground stone tools, the addition of copper implements, the use of quartz crystal gravers for fine wood-working, and a small resurgence in the use of chipped stone tools (Yarborough and Yarborough 1996). Prehistoric subsistence studies suggest that fish appear to have been equal to or more important than marine mammals during the Chugach phase (Yarborough 2000).

Kenai Peninsula/Prince William Sound/Copper River Delta**Historic period (AD 1778 to mid-twentieth century)**

Although Vitus Bering landed on Kayak Island in the Copper River Delta area in 1741, no direct contact between Native Alaskans and Europeans occurred again in this region until the arrival of Captain James Cook in 1778. The years between 1771 and 1778 are generally known as the Protohistoric Period in this area, a time when both European trade goods and previously unknown devastating diseases arrived through established prehistoric trade routes, although there was no direct trade between Europeans and Alaska Natives. The historic era is recognized as beginning in most of the current Forest area in 1778 (Yarborough 2000).

At the time of European contact, Dena'ina Athapaskans occupied much of the northern and interior part of the Kenai Peninsula; Chugach Eskimos, also known as Alutiiq and Suqpiq, occupied most of Prince William Sound; and Eyak Indians were moving into the Copper River Delta area (de Laguna 1956, 1975, 1990). Drastic population declines due to introduced disease, and cultural disruptions related to changed socio-economic and religious situations, are manifested in the physical record of historic settlements. Only intermittently occupied historic Dena'ina settlements are known from the upstream interior drainages of the Kenai River. In addition, some Prince William Sound/Copper River Delta settlements, such as Uqciuvit, Kniklik, Nuchek and Alaganik, were abandoned during the nineteenth and twentieth centuries AD. This resulted in consolidation of people into modern communities such as Tatitlek, Chenega, and Cordova.

Historic/Euro-American Resources – all areas of the Forest

The majority of historic properties on the Forest are directly related to Euro-American economic development of the area after European contact, rather than the cultural and geographic distinctions perceived prehistorically. Although many sites are settlements of one type or another, transportation routes are other recognized historic resources related to this development.

Russian Era (1741-1867) – Exploration/Maritime Trade

The early part of this era is characterized by exploration by variety of European navigators. By the end of the eighteenth century, the Russian American Company, a state monopoly, had consolidated its economic control over the territory of Alaska. During the following 67 years, economic development was oriented towards trade in furs of marine and terrestrial mammals (Cook and

Norris 1998). The Russian trading post of Fort Constantine was established on western Hinchinbrook Island in Prince William Sound, and the Kenai Redoubt was established at the mouth of the Kenai River (de Laguna 1956, Osgood 1976). A short-lived attempt was made to develop a commercial shipbuilding facility in the vicinity of the present-day city of Seward, and small-scale explorations of the mineral potential of the interior of the Kenai Peninsula were conducted, but these poorly organized and supported ventures bore no economic fruit (Cook and Norris 1998).

American Era – Expanded Commercial Resource Exploitation period

The United States purchased Alaska from Russia in 1867. The assets of the Russian American Company were sold to the firm of Hutchinson, Kohl and Company, which quickly merged with the Northern Commercial Company to form the American Commercial Company (ACC). Although other, smaller firms also pursued the fur trade in south central Alaska, the ACC quickly became the driving force of the continuing, but dwindling, fur trade, and the primary dry goods supplier for most residents. By the end of the nineteenth century and beginning of the twentieth century commercial fishing, whaling, fox farming, mining and logging had superseded fur trading as financially significant enterprises.

Commercial Fishing

By the late nineteenth century, fishermen using nets were supplying commercial salteries primarily with salmon. As the industry grew, canneries were established throughout the region to process larger amounts of fish, and the use of fish traps at stream mouths became common (Moser 1899, Porter 1893). The coastal remains of canneries, salteries, fish traps, and the homes of fishermen are the primary historic sites associated with this economic pursuit.

Commercial Whaling

Like the fur trade, commercial whaling was a relatively short-lived pursuit, commencing with exploitation during the Russian era, and continuing during the American era until depletion of the resource was so extreme in the early twentieth century that whaling became financially unprofitable. Although no whaling stations were established in Prince William Sound, at least one coastal shipwreck in the sound may be of a ship used in this trade (Haggarty et al. 1991).

Fox Farming

Dating to the introduction of foxes to the Aleutian Islands by Russians in the 1700s, the practice of fox farming on small islands continued into the twentieth century. Chugach Forest records identify permits issued beginning in 1909 and continuing as late as 1951. Isolated trapping, branding, and feeding stations are present on many islands, while a few complexes include not only these structures but also rearing pens, pelting sheds, docks, and residences (Haggarty et al. 1991).

Mining

Minerals prospecting on the Kenai Peninsula began in the Russian era, but resulted in no substantive discoveries. Prospectors entering Alaska after 1867 were part of a larger North American interest in mining. They were characterized

as men, and a few women, with “gold fever” but included some interested in silver, copper and other minerals. Part of an expanding industry with roots in the eastern U.S., prospectors and miners expanded west to the Rocky Mountains, then the Pacific coast of the United States, and then north into Canada and Alaska. Gold was discovered on the Kenai Peninsula in the vicinity of the Resurrection Valley in 1890. This led to an influx of over 10,000 people to the area by 1896, the development of the towns of Hope and Sunrise, and the establishment of Seward and what would become the Alaska Railroad. Significant gold deposits were found, claimed and worked between Turnagain Arm and Resurrection Bay, along the east side of the Kenai Peninsula. The discovery of copper deposits in Prince William Sound led to a similar rush, the development of large industrial complexes such as the Latouche Copper Mining Company on Latouche Island, the establishment of the city of Cordova, and the mining-related Copper and Northwest Railroad. The economic boom attracted not only miners, but also related service workers in a variety of professions and industries. Mining activities almost ceased with the advent of World War II. The physical legacy of mining on the Forest includes prospect test holes, cabins, roadhouses, trail networks such as the National Historic Iditarod Trail, and a variety of industrial mine sites in remote locations which have been identified for hazardous substance cleanup and safety hazard reductions (Mobley et al. 1990).

Logging

High quality commercial timber was rare on the Kenai Peninsula and in Prince William Sound. At the end of the nineteenth century, local trees were generally used for firewood, while commercial timber was brought in from the Pacific Northwest. Commercial logging began as an adjunct to the demands of the mining-related population, who needed timbers for mine supports and pilings, and wood for railroad ties. By 1925, the majority of timber used in Alaska was locally produced, rather than imported. Small mills were set up in Seward and Cordova. Demand increased with Civilian Conservation Corps work in the 1930s, and defense construction in the 1940s. Until 1949, contracts called for cutting 15,000 cords of pulpwood and 3.5 million board feet of saw timber annually on the Chugach Forest, usually by clear cutting. Evidence of this activity is most often seen in areas of clear-cut tree stumps found throughout the Forest.

Sites Eligible for the National Register of Historic Places

Two sites on the Forest are National Historic Landmarks and have greater protection status than National Register eligibility. These are Palugvik, a prehistoric Native village on Hawkins Island in southeast Prince William Sound, and the Bering Expedition Landing Site on Kayak Island, southeast of the Copper River Delta.

Several areas are recognized as having numerous significant historic properties in close proximity and have been designated Archaeological Districts. The Palugvik National Landmark is one site in the Palugvik Archaeological District. Another District recognized in Prince William Sound is the Rocky Bay

Archaeological District on Montague Island. Both Districts, along with a variety of other eligible sites, commemorate prehistoric Alutiiq culture.

The Sqilantnu Archaeological District encompasses a concentration of prehistoric and historic sites on the downstream portion of the Russian River, and adjacent areas upstream and downstream along the Kenai River. Types of sites in the District include Microblade culture, Kachemak culture, and prehistoric and historic Athapaskan culture sites, as well as evidence of historic gold miners' residences and activities.

Examples of sites on the National Register of Historic Places include the Cordova Post Office and Court House, owned by the Forest Service and used as the office of the Cordova District, the Bering River Steam Engine, the Chilkat Oil Refinery and the Million Dollar Bridge.

The Iditarod Trail has been recognized as a National Historic Trail and declared a Millennium Trail. Many secondary trails that connect with the Iditarod National Historic Trail, such as the Resurrection Pass Trail, are also considered eligible trails. Numerous individual sites associated with its use have been determined eligible for the National Register, among them the Bruhn Ray Mine, the Primrose Cabin and mine, the Mull Cabins, the Wible Mining Camp, and the Harry Johnson Cabin.

The designation "historic properties eligible for the National Register" includes both prehistoric and historic period sites across the Forest that qualify under at least one of four criteria listed in the National Historic Preservation Act, code of federal regulations. These are association or linkage to events (Criterion A) or persons (Criterion B) important in the past, significant for their design or construction value (Criterion C), or the ability to yield important information about prehistory or history (Criterion D). Most prehistoric sites on the Forest are eligible at least in part under Criterion D. Most historic sites are eligible under Criteria A, and/or B, and/or C. Many historic properties are eligible under two or more criteria.

Many eligible cultural and historic properties on the Forest have been selected by Alaska Native corporations for conveyance under Section 14(h)(1) of the Alaska Native Claims Settlement Act (ANCSA). To date, only eight have been conveyed.

Table 3-52 displays the heritage resource sites on the Chugach National Forest.

Table 3-52: Heritage resource sites on the Chugach National Forest, as of January 1, 2002.

Site Category	Number of sites
National Register of Historic Places	7
National Historic Landmarks	3
National Historic Trails	1
Sites Determined Eligible for the National Register	73
Sites Determined Ineligible	65
Other sites	574
Total (Known sites on the Chugach National Forest)	723

Environmental Consequences

General Effects

Unlike other resources such as vegetation or wildlife, heritage resources are not renewable. Damage or destruction is generally permanent. Although repairs may be possible in some cases, the historic nature of a resource is generally compromised once it has been impacted, and its eligibility for the National Register of Historic Places may be affected. Under all alternatives, the Heritage Program will continue to provide support to all of the resource projects, as required by Section 106 of the NHPA. This includes the evaluation and identification of appropriate sites for the National Register of Historic Places. In addition, the program would include inventory as required by section 110 of the NHPA, analysis, protection of significant heritage resources from vandalism and other negative human impacts, and from natural destruction. The Heritage Program staff will identify opportunities for interpretation of heritage resources for public enjoyment and education, using established programs such as Passport In Time, and working closely with the interpretive staff.

Management of heritage resources under Categories 4 and 5 prescriptions (see Chapter 2) may require more historic properties inventories than other prescription categories, and would emphasize protection and mitigation, including on-site interpretation for public education. These include activities such as forest restoration, mining, campground construction and trail construction. Although pedestrian surveys do not necessarily locate all heritage resources in a given area, this would potentially increase the knowledge of the historic properties on the Forest through an increased number of surveys. In the No Action Alternative, no acres are prescribed for Category 4 management, and only 0.23 percent of the Forest is prescribed for Category 5 management. The amount of acres managed in these categories is the same for Alternatives B, D, E, F, and the Preferred Alternative, with the implication that Heritage Resources in prescription areas falling under Category 5 for these alternatives would be managed in the same manner as at present. While the amount of land managed as Category 5 remains the same in Alternatives A and C, 10 percent of the Forest prescriptions are within Category 4 in Alternative A, and 5 percent in Alternative C. The effect of the increase in Category 4 managed lands in these two alternatives on

Heritage Resources would be an increase in the amount of inventory related to project activities and increased human use, with the expectation that additional Historic Properties would be discovered, evaluated, found eligible for the National Register of Historic Places, and subsequently interpreted for the public.

Prescriptions that fall under Categories 2 and 3 allow motorized travel and encourage a moderate amount of public recreation. Human use, although moderate, would have the added potential of both vandalism and unintended erosion effect on historic properties in less supervised situations. Maintenance and/or restoration of natural resources or ecological processes, and habitat manipulation, may impact historic properties. Mitigation of such manipulation, maintenance and restoration work would have only a small effect on the environment as perceived by the recreating public, and interpretation could occur primarily off-site. Over 69 percent of the Forest acreage in the no Action Alternative has Category 2 or 3 prescriptions. This compares to just over 53 percent in the Preferred Alternative, about 90 percent in Alternative A, 83 percent in Alternative B, 74 percent in Alternative C, 52 percent in Alternative D, 32 percent in Alternative E and 18 percent in Alternative F. Because over half the Forest is proposed to be managed under prescriptions in Categories 2 and 3 in the No Action and Preferred Alternatives, and Alternatives A through D, project-related work in these alternatives may result in a large number of both acres surveyed and resources located. Heritage Program work completed in the process of implementing laws relating to such projects would result in expansion of knowledge regarding these resources. It would also improve the database available for developing models to predict Historic property locations.

In areas designated for Category 1 prescriptions, few management-driven projects would be expected, and would therefore have little effect on cultural resources. Although land travel would be nonmotorized, human use may be moderate, as a result of possible increases in unregulated motorized boat access via the Whittier Road and Prince William Sound. The location of many cultural resources coincides with boat landing sites throughout the sound, and some well-known sites are actually recreation destinations. As with Categories 2 and 3, there would be a potential for vandalism and unintended erosion of or effect on cultural resources in minimally supervised situations. Because few individuals are expected to use these areas, site vandalism may occur and remain unnoticed for long periods of time. Historic structures, buried cultural resources, and cave and rock shelter sites would appear in their natural states. The percent of Forest acres on which historic properties would be managed under Category 1 prescriptions varies widely, from less than 1 percent in Alternative A, about 17 percent in Alternative B, and 26 percent in Alternative C, 43 percent in the Preferred Alternative to almost 50 percent in Alternative D, about 69 percent in Alternative E and over 81 percent in Alternative F. The No Action Alternative places about a third of the Forest in Category 1 prescriptions. Site inventory and condition documentation, with yearly monitoring by Forest Service staff, would be the major heritage resource activities for this category, in addition to any project support. As with historic properties in Categories 2 and 3, on-site interpretation could, and would most likely, occur primarily off-site.

Direct and Indirect Effects

Effects from Facilities Maintenance – Several of the facilities currently in use on the Forest are historic properties. The maintenance, reconstruction, remodeling, and removal of these properties are considered to be a direct effect to the property. In all prescriptions and alternatives, these activities would be conducted in compliance with the NHPA.

Effects from Fire Protection – Wildland fire poses direct threats to historic structures and features such as corduroy roads, and indirect threats to prehistoric sites whose buried artifacts may be thermally altered by intense heat. The suppression of wildland fires has the potential to affect historic properties if control activities directly disturb historic properties. In all prescriptions and alternatives, activities that reduce fuel loads, such as prescribed burns and salvage sales, are projects that require mitigation measures to comply with the NHPA.

Effects from Wildlife and Fisheries – Impacts from wildlife and fish habitat management activities are generally limited to the project level. These projects include, but are not limited to, prescribed burns, revegetation, and stream fish structures. Effects that might occur to historic properties would be mitigated in compliance with the NHPA in all prescriptions and alternatives.

Effects from Land Exchanges – Exchanges of federal land for private land has the potential to affect cultural resources. The legal protection for historic properties ends once the land ownership becomes private. In all prescriptions, this direct effect must be mitigated in compliance with the NHPA, before the land exchange takes place. Conversely, land that is acquired by the federal government is protected by all the laws, which normally apply to federally maintained lands. Such property should be inventoried for cultural resources and managed appropriately according to the Revised Forest Plan subsequent to its acquisition.

Effects from Easements and Utility Corridors – The construction activities for utility developments and the establishment of various types of easements have the potential to both directly and indirectly affect historic properties. In all alternatives, these direct and indirect effects will be mitigated in compliance with the NHPA. One indirect effect is the potential for vandalism of a site or theft of artifacts during the execution of projects. Another indirect effect is making access available to the public to previously inaccessible areas.

Effects from Recreation - The construction of recreation facilities, such as campgrounds, trails, roads, toilets, and parking areas, has the potential to directly affect cultural resources. In all prescription categories, these direct effects will be mitigated before the initiation of construction. Both positive and negative effects can indirectly result from recreational management. Negative impacts include vandalism of sites and theft of artifacts, inadvertent camping directly on sites, and soil erosion. Some of the positive effects are the edification and education of the public about heritage resources, which in turn provides public support for preservation and interpretation. Construction of new trails or roads into areas,

which previously had little public access, and improvement of existing trails and roads creates an indirect effect to cultural resources as it opens new areas to recreational activities and increases the potential for disturbance. Very little of such construction is planned under the Preferred Alternative, so little additional effect is expected to cultural resources from such activities.

Access to cultural sites by motorized vehicles or boats, however, seems to increase the probability of damage to a site. Impacts to cultural resources in the form of vandalism and theft of artifacts are generally the greatest within ¼ mile of areas of motorized use. Prescription Categories 2 and 3 provide motorized access to sites, and Categories 4 and 5 place a high emphasis on motorized recreation, and would therefore have greater indirect impacts on cultural resource sites. In addition, although Category 1 prescriptions do not allow motorized road or trail access, a substantial portion of Forest lands in this category are easily accessed by boat, via the Whittier Road. As a result, cultural resources within ¼ mile of the shore of the sound would be subject to the same indirect effects as those areas accessible by roads and trails in other parts of the Forest.

The effect of organized recreation through outfitter/guides can be both positive and negative. If outfitter/guides are educated regarding cultural resource protection laws and are required to provide such information to their clients prior to guided trips, they would be able to assist the Forest in its cultural resource protection responsibilities. If not, they may directly or indirectly impact cultural resources by inadvertently disturbing cultural resources of which they have no knowledge.

Effects from Wilderness Management – A wilderness prescription reduces the amount of potential damage to heritage resources from management activities. If the management of wilderness requires the removal of buildings that are historic properties, this direct effect would be mitigated prior to their removal. Currently, most cultural resource inventories are conducted in areas where ground-disturbing projects are proposed. In areas that are managed as wilderness, there would be fewer ground-disturbing projects.

Effects from Timber Management – Alternatives A, B, and No Action would have larger, commercial timber sales. Heavy machinery used to build roads and harvest trees would have the potential to directly affect cultural resources. However, even in smaller scale timber projects, such as for fuel management, the actual harvesting has the potential to directly affect cultural resources. Archaeological sites are threatened by the disturbance of the soil. Direct effects would be mitigated in compliance with the NHPA in all alternatives.

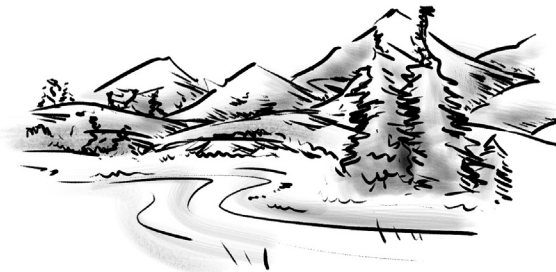
Effects from Mineral and Energy Development – Pertaining mainly to prescriptions in Category 5, the use of heavy machinery in the construction and access to energy and mineral extraction areas, as well as the actual extractive activities themselves, are direct effects, which would be mitigated in compliance with the NHPA. Many current claims are on or in the vicinity of historic mining remains, some of which have been determined eligible for the National Register

of Historic Places. Many of the mines identified for safety hazard cleanup have already been determined eligible for the National Register of Historic Places, and such a determination is likely for others. Indirect effects of both development and cleanup work include the potential for vandalism of a site or theft of artifacts during the execution of the project, and the increased potential for vandalism and theft due to new public access. The result of such projects would be the assessment, consideration, and mitigation of both indirect and direct effects on cultural resources.

Cumulative Effects

In general, the Preferred Alternative would represent little change from the No Action Alternative in regards to the effect of management on heritage resources. Motorized access would decrease in some areas, possibly decreasing the impact of the public on cultural resources. Alternatives A and C would likely have the greatest effect on the management of heritage resources because of their inclusion of lands with Category 4 as well as Category 5 prescriptions. The opening of the Whittier Road is expected to increase public access to Forest lands managed under prescriptions in Categories 1-3 in all alternatives. While not a result of Forest management activities, the potential increase in public access to and impact on heritage resources in Prince William Sound needs to be monitored and addressed in the management of these areas.

The laws protecting cultural resources apply to federal lands, and federal undertakings, as defined in the NHPA. While undertakings occur primarily on public lands, some may occur on privately owned lands where the Forest Service has easements, or can occur in situations where the Forest, or another federal agency, is funding or permitting a project or activity. The benefit to the public is that Forest compliance with Section 106 of NHPA on all prescriptions will provide information about and protection for significant cultural resources, while similar information and protection may be absent for sites on privately owned lands.



Lands

Introduction

This section addresses management of landownership and special uses, such as electronic sites, utility corridors, and roads.

Legal and Administrative Framework

- The **Organic Act, Forest Land Policy and Management Act, Alaska National Interest Lands Conservation Act (ANILCA), Alaska Native Claims Settlement Act (ANCSA)** and numerous other laws provide the framework for land use authorizations and ownership adjustments.

Key Indicators

- Acres of transportation/utility corridors and electronic sites

Resource Protection Measures

Lands are consolidated for improved management efficiency, to reduce property boundary lines, to eliminate management problems, to provide public access, and protect specific resources. Land acquisitions are evaluated for resource protection/acquisition, restoration support and administrative benefits provided through changes in land ownership. Appraisals determine purchase price for acquisitions and identify if any inequalities of land values must be corrected to enable completion of land exchanges.

Public requests to develop or expand commercial land use opportunities must be in compliance with all pertinent laws and Revised Forest Plan direction before the request is accepted for consideration.

<h2>Affected Environment</h2>

Land Ownership

The Chugach National Forest was created by presidential proclamation in 1909. The number of acres of public land administered by the Chugach National Forest has undergone several major changes. ANILCA established the present boundaries including the Copper River addition, the College Fiord addition, and the Two Indian deletion. Approximately 90 percent of Native and state land entitlements have been conveyed. *Exxon Valdez* oil spill land acquisitions have resulted in the acquisition of 102,790 acres in fee simple interest and conservation easements interests. Land and resource data acquired since land conveyance is being used to identify areas for potential ownership adjustments to consolidate resource protection and management and public activities.

The United States acquired land interest as part of the *Exxon Valdez* oil spill (EVOS) restoration process, some of which were acquired in the Forest. Acquisitions have been based on the offers of willing sellers. Priorities for action are determined through resource evaluation and identification of benefits to oil

spill recovery. This established process would guide all future EVOS funded acquisitions and may assist in evaluating opportunities outside the spill area.

Through the EVOS land acquisition process, over 120 private land parcels have been identified with potential benefits for acquisition. The National Forest System lands historically administered by the Chugach National Forest on Afognak Island have been selected and are going through the conveyance process. The need for land exchanges is increasing as private land developers address difficult access issues to private lands. Table 3-53 shows the current land status for the Chugach National Forest.

Table 3-53: Chugach National Forest land status (acres), as of January 1, 2002.

National Forest System	5,391,240
Acquired National Forest	102,790
State of Alaska	383,890
Native Corporations	418,500
Private	16,460
Net National Forest	5,494,030
Gross	6,312,880

Source: Chugach National Forest GIS corporate database.

Please note that the net acres is slightly different (+0.02 percent) than what was used in the Forest Plan revision analysis. The Forest acres are continually changing as lands are acquired and disposed of.

Special Uses

Special use permits allow occupancy or use of or rights and privileges on National Forest System lands. In many rural locations, Alaska's infrastructure is largely undeveloped. The 1984 Forest Plan identified that there was a full range of occupancies that are authorized through special use permits, easements and memoranda of understanding. Since 1985 the special use administration workload has increased by approximately five percent per year.

Currently the Forest administers 253 permits consisting of 42 cabins or residences; 80 outfitter guides; 42 industrial camps; 2 hatcheries; 11 power lines and FERC-related activities; 15 electronic sites; 11 roads, and 40 minerals materials permits. Memoranda of Understanding and Agreements include military training exercises, interagency management of lands, resource investigations, and management and navigation aids for boats and planes.

Environmental Consequences

General Effects

The Revised Forest Plan determines management allocations, which may influence land acquisition or disposal priorities, and direct where and how special land uses for personal or commercial activities may occur. Land ownership may be adjusted to: 1) meet identified reserve management needs; 2) reduce administration problems and cost, and further enhance public use; and, dispose of land better suited for non-federal ownership. The implementation of the Revised Forest Plan will place lands under management direction such as establishing limits or guidelines for developing access to private property,

developing communication systems and establish parameters for commercial development or recreational operations.

Land Ownership Effects

Land ownership is not directly impacted by the implementation of the Revised Forest Plan.

Land adjustment activities are expected to increase in volume as private landowners seek opportunities to dispose of properties and federal and private land managers discover benefits of consolidating land ownership. These activities will be influenced by the Bureau of Land Management completing land conveyances under Alaska Statehood Act, Alaska Native Claims Settlement Act, Alaska National Interest Lands Conservation Act and the Chugach Natives Incorporation Settlement Agreement of 1982. The Revised Forest Plan standards and guidelines will direct how efforts to resolve complicated resource management through land ownership adjustment.

Special Uses Effects

The tourism and outfitter/guide industry is increasing at a rate of about 12 percent per year (Brooks and Haynes in press). Many popular recreational sites have reached the desired capacity for visitation and commercial operators are seeking new areas to operate. Tourism industry efforts to provide accommodations for visitors are creating new uses such as floating lodges.

Under all alternatives, the expected growth of tourism of 8-12 percent per year will create an increase in demand for commercial uses of public lands and the development of private lands with supporting uses such as access, water, and power from public lands.

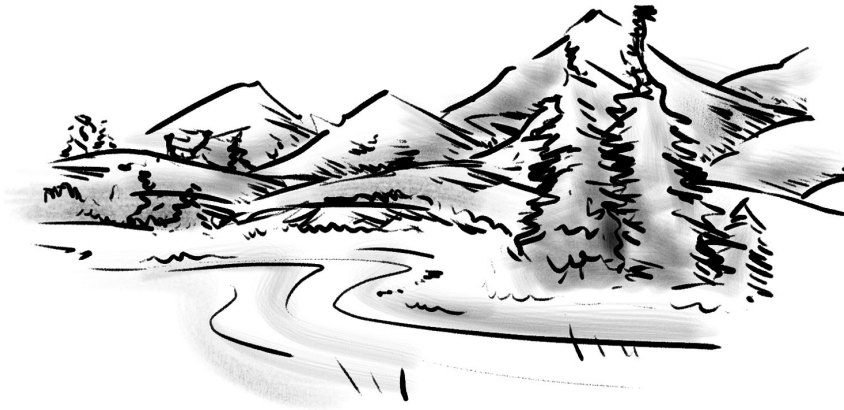
Technology improvements in fields of communication, especially cellular phones and fiber optics, and the growing visitation to remote sites are developing increased demand for use of public lands for repeater facilities. The Memorandum of Understanding with the State of Alaska on tide and submerged lands and coastal zone management has generated a need for increased coordination and cooperation with state agencies. Private landowners desire access to inholdings for commercial purposes. Increased populations and industrial growth in rural areas is creating higher demands for electrical power, and power companies are upgrading and modifying power lines and access routes. A mari-culture industry is becoming established in Prince William Sound, generating requests for utilization of public lands to support farming operations.

Alternatives for managing special uses range from maximizing development opportunities to maximizing wilderness management. Alternatives maximizing development provide the greatest opportunity for special use activities and would have fewer constraints on developing access and public services. As alternatives shift to wilderness management the opportunities for development decrease and constraints on uses increase. Examples of increasing constraints as wilderness values increase include limiting group size for operators in wilderness, requiring special design features, or requiring screening and extra effort required to blend developments into the wilderness setting.

Management Prescription Effects

The Transportation/Utility System/Electronic Sites Management Area would be managed for existing and future transportation systems, utility systems and electronic sites. These systems are defined as state and federal highways, hydroelectric dams, reservoirs, power generation sites, railroads, railroad spurs, powerlines, electronic sites, pipelines 10 inches or greater in diameter, and the two potential access routes identified in the Chugach Natives Incorporated Settlement Agreement (1982) to the Bering River coalfields. This management area prescription does not apply to Forest development roads or to roads that access private in-holdings.

All alternatives, including the Preferred Alternative, would manage 5,900 acres for major transportation/utility systems, electronic and communication sites.



Recreation and Tourism

Introduction

In 1899, E. J. Harriman invited the country's leading natural scientists on a voyage to Alaska. Traveling 9,000 miles from Seattle to the Bering Sea, naturalists such as John Muir, William Dall, Louis Agassiz Fuertes, and B. E. Fernow recorded their observations of Alaska's wildlife and fish, Native peoples, natural resources, and geography. Henry Gannett, Chief Geographer of the U.S. Geological Survey, concluded his chapter for the twelve-volume report of the Harriman Expedition with the following observation (Burroughs et al. 1901):

There is one other asset of the Territory not yet enumerated, imponderable, and difficult to appraise, yet one of the chief assets of Alaska, if not the greatest. This is the scenery. Its grandeur is more valuable than the gold or the fish or the timber, for it will never be exhausted. This value, measured by direct returns in money received from tourists, will be enormous; measured by health and pleasure it will be incalculable.

Recreation and tourism is how people directly experience the spectacular natural scenery of the Chugach National Forest. Rugged mountain ranges with slopes and glaciers that tumble to the sea; fish runs so abundant that any angler can catch a big one; watchable wildlife such as brown bears, moose, bald eagles, whales, and sea otters; seabird concentrations that may be unrivaled anywhere else north of the Everglades; and, old growth temperate rainforest scattered on a string of islands and coastal lands--all make the Chugach National Forest an outstanding recreational setting for people seeking health and pleasure.

Yet the very features that make the Chugach National Forest so outstanding may also limit recreational opportunities. Much of the Forest is covered with steep mountains, glaciers, icefields, or icy-cold saltwater. People must have well-developed outdoor adventure skills such as backcountry skiing, sea kayaking, and mountaineering, or use modern technology such as snowmachines, helicopters, and motorized boats to access this rugged, remote, and often unforgiving terrain. Frequently a combination of both approaches is needed to fully enjoy the Chugach National Forest.

As a result, mainstream recreational opportunities on the Chugach National Forest are concentrated along the few road corridors and shorelines that people can easily reach. Crowding and some conflicts among recreationists are increasing in such areas. Tourists and residents may look to the private sector for the technical skills and support they need to access less crowded backcountry areas. Such businesses can serve to increase the availability of remote areas to the public. Construction of new recreation facilities such as trails and campgrounds can also increase the range of areas easily accessible for mainstream recreationists. Yet whether new opportunities are provided through tourism businesses or additional facilities, the central dilemma of balancing access and the land's capacity remains--how do we continue providing high

quality recreation opportunities in a way that conserves the Forest's unique natural landscape for future generations?

Public input to this planning process has identified Recreation and Tourism as one of the six situations central to revising the Forest Plan. The main components of the Recreation/Tourism Situation are: 1) people's desire for a variety of recreation settings and opportunities; 2) the desire for either additional or fewer facilities than today's levels; and 3) competition for access to National Forest System lands among recreationists pursuing different activities, particularly motorized and nonmotorized winter activities.

Legal and Administrative Framework

- The **Organic Act of 1897** instructs the Secretary of Agriculture to preserve and regulate occupancy and use of the national forest.
- The **Multiple-Use Sustained Yield Act of 1960** expands the purposes for which national forests were established, which include outdoor recreation, range, timber, watershed, wildlife, and fish.
- The **Wilderness Act of 1964** established the National Wilderness Preservation System, consisting of federal lands designated, among other purposes, to preserve their "primeval character and influence."
- The **National Trails System Act of 1968** established a national system of recreation, scenic, and historic trails, in "order to provide for the ever-increasing outdoor recreation needs of an expanding population."
- The **National Forest Management Act of 1976 (NFMA)** established the forest planning process, with regulations stating that forest plans will provide "for the safe use and enjoyment of the forest resources by the public."
- The **Wild and Scenic Rivers Act of 1968** established a system to preserve rivers with "outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values."
- The **Forest and Rangeland Renewable Resources Act of 1974** directs the Secretary of Agriculture to periodically assess the forest and rangeland resources of the nation, and to submit to Congress, at regular intervals, recommendations for long-range Forest Service programs essential to meet future resource needs.
- The **Land and Water Conservation Fund Act of 1964** "assists in preserving, developing, and assuring accessibility to all citizens of the United States of America...such quality and quantity of outdoor recreation resources as may be available and are necessary and desirable...by...providing funds for the federal acquisition and

development of certain lands and other areas.” The Act also provides for the collection of daily recreation use fees for each federal agency developing, administering, providing or furnishing, at federal expense, specialized outdoor recreation sites, facilities, equipment, or services.

- The **Alaska National Interest Lands Conservation Act of 1980 (ANILCA)** includes a variety of provisions with direct or indirect implications for recreation management on national forests such as access, traditional activities in wilderness, taking of fish and wildlife, establishment of the Nellie Juan-College Fiord Wilderness Study Area, etc.
- **Forest Service Manual 2300** contains Forest Service Policies for recreation management.

Key Indicators for Recreation Settings

- Difference among existing and proposed Recreation Opportunity Spectrum (ROS) classes, by alternative
- Comparison of relative distribution of ROS classes, among alternatives

Key Indicators for Accommodating Recreation Use

- Comparison among existing developed infrastructure and capacity and the alternatives’ proposed developed infrastructure and capacity
- Comparison among existing dispersed recreation capacity and the alternatives’ proposed dispersed recreation capacity

Key Indicators for Responding to User Group Conflicts

- Comparison of strategies used by alternatives to respond to user group conflicts, in each geographic area (Kenai Peninsula, Prince William Sound, Copper River Delta)

<h2 style="text-align: center;">Affected Environment</h2>
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The Affected Environment describing the current situation for Recreation and Tourism on the Chugach National Forest is divided into two major parts. The first displays and discusses the existing situation with respect to recreation activities, recreation infrastructure, recreation settings and capacity, commercial services, and interests and situations for the three geographic areas of the Chugach National Forest. This part provides the reader with a snapshot of the nature and quantity of recreation occurring on the Forest and may be thought of as presenting the current supply side of recreation and tourism. It is organized under the following topic areas:

Key Concepts:

- Definitions
- Information Sources

Existing Recreation Situation By Geographic Area:

- Types of Activities
- Infrastructure and Capacity
- Range of Inventoried Settings and Capacity
- Interests and Situations

The second is an in depth presentation and discussion of past, present, and projected participation in recreation activities at the national, state, and local levels. This part sets the stage for the assumptions and methodology that is used to project recreation use on the Chugach National Forest to the year 2010. This part may be thought of as presenting the future *demand* side of recreation and tourism on the Chugach National Forest:

Projections of Recreation Use:

- Information Sources for Participation and Use Projections
- National Recreation Use and Projections
- Alaskan Recreation Use and Projections—Alaskan Residents
- Alaskan Recreation Use and Projections—Alaska Visitors
- Chugach National Forest Recreation Use
- Summary of Recreation Patterns
- Projections of Visits for the Chugach National Forest

Following this section on the Affected Environment, the Environmental Consequences of the alternatives are analyzed using the concepts, data, and projections presented in the Affected Environment.

Key Concepts

In setting the stage for the Affected Environment and Environmental Consequences, several key concepts used by Forest Service managers of recreation and tourism need to be defined. These concepts are components of the key indicators listed in the previous section. After the concepts are defined, sources of information about them for the Chugach National Forest are described.

Recreation Settings

The goal of most recreationists is to have a positive experience by engaging in outdoor recreation activities. Forest managers cannot provide recreation experiences, but they can provide the settings for these experiences to be realized. Recreation settings in this context are the physical places in which a variety of recreation activities occur. Participating in activities in appropriate settings creates a user's recreation experience and consequent level of satisfaction (USDA Forest Service 1986). Matching one's desired experience

with a setting that can allow the realization of that experience is the key to a satisfactory, positive recreation experience.

Settings are described by defining the attributes that people can expect to find at a particular location. Knowing the attributes characteristic of a given setting assists people in matching their desires to appropriate settings. For example, individuals seeking solitude, challenge, and remoteness will seek settings that are distant, inaccessible, and undeveloped. In contrast, a person desiring easy access, comfort, and opportunities to interact with many other people will seek convenient highly used settings that provide modern facilities.

The Forest Service utilizes a system, called the Recreation Opportunity Spectrum (ROS), to describe different settings across the Forest. The ROS can be used in two ways for recreation planning: (1) it can be used to inventory recreation settings that currently exist on the Forest, sometimes referred to as “inventoried ROS” or “existing condition ROS”, and (2) it can be used to describe management direction for the future, also referred to as “proposed ROS”. The ROS system describes settings as classes with specific, defined attributes. The ROS classes range from highly modified and developed places to primitive, undeveloped settings. Attributes typically considered in describing the settings are scenic quality; type and degree of access; remoteness; level of development; social encounters; and the amount of on-site management (USDA Forest Service 1986, also referred to as the “ROS Book”). Table 3-54 is a matrix that displays these attributes for the ROS classes found on the Chugach National Forest.



Table 3-54: Description of ROS classes on the Chugach National Forest.

ROS Element	Rural (R)	Roaded Modified (RM)	Roaded Natural (RN)	Semi-primitive Motorized (SPM)
Scenic Quality	Alterations to landscape character may dominate; activities do not exceed moderate SIO in Fg, Low SIO in Mg	Alterations to landscape character dominate; activities & structures evident, but do not exceed low SIO.	Alterations to landscape character subordinate; activities do not exceed low SIO	Alterations to landscape character few & subordinate; activities and structures designed and located to not exceed moderate SIO.
Access	All methods of access and travel may occur, but subject to formal regulation.	All methods of access and travel when needed and compatible with intended activities	All methods of access and travel may occur, when compatible with intended activities; zones of nonmotorized use.	Travel on trails designed for or open to motor vehicles. Roads maintained for high clearance vehicles. Motorboats operate on water. Zones of non-motorized use may be established to protect facilities or resources.
Remoteness	Remoteness from sites and sounds of human activity not available or important.	Remoteness from continuous sounds of human activity is expected.	Remoteness from continuous sounds of human activity is of moderate importance.	Nearby sights and sounds of human activity are rare. Distant sounds may be heard.
Visitor Management	On-site regimentation and control is obvious.	On-site regimentation and control is obvious.	On-site regimentation and controls are few.	On-site regimentation and controls are few.
On-site Recreation Development	Recreation structures and facilities readily evident, but appropriate for setting, designed for high use levels. Information and interpretive facilities may be large and complex.	Recreation structures and facilities provided for site protection and user convenience. Facilities are contemporary but of rustic design and harmonize with natural setting.	Recreation structures and facilities may be present, but are provided primarily for protection of the resource rather than user convenience. Facilities are rustic and harmonize with a backcountry setting.	Recreation structures and facilities may be present, provided primarily for protection of site rather than user convenience. Facilities are rustic and harmonize with natural setting.
Social Encounters	Moderate to high concentrations of people at one time.	Interactions with others may be moderate to high. Moderate concentrations of people, especially on trails and in dispersed areas.	Moderate concentration of users on roads and little evidence of others or interactions at campsites.	Low interaction between users. Campsites seldom within sight or sound of another group except during peak periods.
Visitor Impacts	Very noticeable but managed to prevent physical resource degradation.	Use noticeable, but not degrading resources. Site hardening dominates campsites and parking areas.	Use noticeable but not degrading to resources or established SIOs.	Use noticeable but not degrading to resources or backcountry setting.
Chugach National Forest Example	Begich, Boggs Visitor Center	None at this time	Seward Highway, Copper River Highway	Scott Glacier drainage

SIO = Scenic Integrity Objective; Fg = Foreground Mg = Middleground.

Table 3-54 (continued): Description of ROS classes on the Chugach National Forest.

Semi-primitive Groups (SPG)	Semi-primitive Nonmotorized (SPNM)	Primitive II (PII)	Primitive I (PI)	ROS Element
Alterations to landscape character in Fg dominate, surrounding area natural appearing	Alterations few and subordinate to landscape character; activities and structures designed to meet high SIO.	Alterations to landscape character not evident. Few structures are present		Scenic Quality
Primarily nonmotorized, access by boat, plane or trail	Trails closed to motorized use. Nonmotorized boats used on freshwater lakes and streams.	Motorized use for traditional activities and subsistence only. Generally nonmotorized off trails or water bodies, primitive trails	Nonmotorized, primitive trails	Access
Remote from other sites, but on-site sounds of human activity present	Nearby sounds of human activity are rare. Distant sounds may be heard.	None or very infrequent sounds of human activity.	None or very infrequent sounds of human activity.	Remoteness
On-site regimentation and control is obvious.	On-site regimentation and controls are rare.	On-site regimentation and controls are very rare.	On-site regimentation and controls are very rare.	Visitor Management
Recreation structures and facilities may be present, provided primarily for protection of site rather than user convenience. Facilities are rustic and harmonize with natural setting.	Recreation structures and facilities may be present but provided primarily for protection of site rather than user convenience. Facilities are rustic and harmonize with natural setting.	Recreation structures and facilities rarely present, provided primarily for protection of site rather than user convenience. Facilities of native material and harmonize with natural setting.	Recreation structures and facilities rarely present, provided primarily for protection of site rather than user convenience. Facilities of native material and harmonize with natural setting.	On-site Recreation Development
Moderate to high concentrations of people at one time, typically large groups for short periods of time	Low interaction between users. Campsites seldom within sight or sound of another group except during peak periods.	Very low interaction between users. No other groups in sight or sound of overnight camps.	Very low interaction between users. No other groups in sight or sound of overnight camps.	Social Encounters
Very noticeable but managed to prevent physical resource degradation.	Human use noticeable but not degrading to resources.	Human use essentially unnoticeable. Site hardening—boardwalks, boat moorings, food caches may be present.	Human use essentially unnoticeable. Site hardening—boardwalks, boat moorings, food caches may be present	Visitor Impacts
None at this time	Johnson Pass Trail	Eastern Copper River Delta	Unakwik Inlet, Icy Bay	Chugach NF Example

SIO = Scenic Integrity Objective; Fg = Foreground Mg = Middleground.

Recreation Capacity

Recreation capacity is an estimate of the number of people that could occupy the Chugach National Forest at one time within the limits of the recreation settings (USDA Forest Service 1986). The number of people at one time, referred to as people-at-one-time (PAOT), varies by the mix of settings and the number of developed facilities on the Forest. Recreation capacity may be thought of as the supply of recreation opportunities available on the Forest.

Alternatives for management can change the Forest's supply of recreation opportunities in several ways. For example, assigning more of the Forest to ROS classes at the Rural end of the spectrum would increase total capacity, whereas more area in Primitive classes decreases the total capacity. Capacity can also be increased by constructing additional developed facilities designed for higher densities of people. A detailed discussion of ROS settings and capacities is located later in this section.

Recreation Activities

Recreation activities are what people do to create their recreation experience. Driving for pleasure, viewing scenery, watching fish and wildlife, and winter sports are recreation activities that are particularly popular on the Chugach National Forest. Recreation activities and the settings in which they occur are inseparable. People venturing out to recreate on the Forest may participate in several different activities in one or more settings on any given trip, or they may find their desired opportunity in a single setting.

For example, a family may go camping in their RV to a developed campground and enjoy visiting with other campers, cooking dinner over a campfire, and exploring nature in the campground. They are finding multiple activities in a single setting. Another family may also camp in the same campground, but decides to take a hike to fish in an alpine lake. The campground is in a Roaded Natural setting, while the hiking trail traverses Roaded Natural and Semi-primitive Nonmotorized settings before ending at the lake in a Primitive setting. The second family is participating in multiple activities in a variety of settings.

Suitability of Lands and Waters for Recreation Activities

Suitability of lands and waters for recreation activities relates to the capability of the land or waters to support a given recreation activity or setting. All acres of the Forest are not created equal when it comes to suitability for a given recreation activity. For example, a backpacker looking for a place to pitch a tent will avoid steep hillsides, wet muskegs, and alder thickets. It may be that in a 100-acre area, only 80 acres are actually suitable for primitive camping. Suitability of land for specific activities is evaluated in concert with establishing capacities for various settings.

Recreation Use

Recreation use is a measure of the number of people participating in a given activity or using a given site. Use is measured in a variety of ways by recreation managers and researchers. Researchers often measure the percentage of a population that participates in an activity at least once a year. This type of

recreation participation is evaluated in depth under “Projections of Recreation Use”. Forest Service recreation managers typically measure recreation use in one of two ways: as a recreation visit or as a recreation visitor day. Recreation visits is the measure that is used in this analysis.

The following definition was used in the collection of the use data on the Forest in 1998. A recreation visit is one person visiting a site or participating in a recreation activity on a given day. How long they stay at a site or participate in an activity is not measured. One person may generate several visits in a day if they go to multiple places in a day or participate in more than one activity in a day. For example, a person might take a scenic drive along Turnagain Arm to visit the Begich, Boggs Visitor Center on Portage Lake, then go for a hike on Portage Pass Trail, and finish the day by paddling a kayak to the kittiwake rookery across from Whittier. The Forest Service would measure this person’s day of recreation as one visit for “driving for pleasure”; one visit for “viewing scenery”; one visit for “learning at a visitor center”, one visit for “hiking”, and one visit for “sea kayaking”. This single individual has generated a total of five visits in one day to the Chugach National Forest.

As part of the analysis of recreation supply and demand, use levels are projected into the future to provide an estimate of future demand. Future demand can then be compared to each alternative’s proposed recreation capacity or supply. The methodologies used to measure current use and project use into the future are described in detail in “Projections of Recreation Use”.

Special Use Permits

Recreating on many areas of the Chugach National Forest require excellent outdoor skills and/or specialized equipment. Some people may not have the requisite skills or equipment yet still desire to participate in a particular activity or to visit a remote area of the Forest. Where such services are needed or desired, commercial outfitters and guides are present to assist people and enhance their recreation experience. Outfitter and guides operating on the Forest are required to have a special use permit authorizing them to provide commercial services to the public.

The Forest Service authorizes commercial activities via special use permits to facilitate the public’s participation in recreation activities; to provide services that add value to a recreation activity; and to help maintain recreation settings by distributing recreationists into underutilized settings. Types of services provided by outfitter/guides on the Chugach National Forest include big game hunting, whitewater rafting, llama packing, dog sled rides, and a wide variety of other recreation activities. Equivalent terms used in this FEIS or the Revised Forest Plan for special use permits include commercial operations, commercial services, and special use permits.

Group Size

Group size refers to the total number of people traveling together. As an attribute of recreation settings, the number and type of social interactions with people other than one’s own group significantly affects the quality of one’s recreation

experience. Maintaining the attributes of settings is key to meeting recreationists' expectations.

For example, the opportunity to meet new people and participate with them in recreation activities is a major attraction of RV camping for many people. For the social campers, a developed setting with many other people, including large groups, provides a quality recreation experience. Conversely, backpacking often attracts people looking to get away from it all. For such backpackers, a little used trail that leads to an isolated lake with no one else for miles around provides the optimal recreation opportunity.

Accordingly, the Forest Service manages the attributes of settings to ensure that people's expectations are met for all ROS classes. Providing facilities that accommodate and promote large gatherings would be consistent with settings on the Rural end of the spectrum. In Primitive and Semi-primitive ROS classes, managers would take actions to keep use at levels appropriate for remote settings, such as limiting the number of Special Use Permits for rafting a river or designing trails that promote small group travel.

Information Sources for Recreation Settings, Capacity, and Use

Three primary information sources are used for data regarding recreation settings, capacity, and use levels on the Chugach National Forest. This data is used to describe the existing situation or baseline conditions. The data is then used in the analysis of the alternatives and the changes that are projected to occur under each alternative.

Recreation Settings

In 1998, the Forest Service inventoried all lands within the Chugach National Forest boundary using the principles and methods in the ROS Book (USDA Forest Service 1986). This document is generally considered to be the authoritative approach to identifying and mapping recreation settings, and is widely used throughout the Forest Service. USGS quads were used as the base for the ROS inventory mapping, which was then entered into the Forest's Geographic Information System (GIS). The definitions and mapping of the ROS classes were reviewed by staff from all three Ranger Districts who were knowledgeable about their Districts and the ROS classes. This process for inventorying ROS classes results in a reliable display of existing recreation settings on the Chugach National Forest. The mapping is intended to provide a broad layout of settings and is not applicable at a site-specific level. Site-specific anomalies may occur within a given recreation setting. This validated map of ROS classes across the Forest is the inventoried ROS. The inventoried ROS classes are the baseline against which the proposed distribution of ROS classes under each alternative is compared.

Recreation Capacity

Recreation capacity is divided into two categories: developed capacity and dispersed capacity. Developed capacity includes the capacities of constructed recreation facilities such as cabins, campgrounds, visitor centers, day-use areas,

and other developed sites. Dispersed capacity is the capacity of undeveloped areas as determined by the recreation setting.

Recreation capacity is measured in two ways: people-at-one-time (PAOT) or people-at-one-time-days (PAOT-days). PAOTs provide a “snapshot” in time of the number of people that could occupy a developed site or an undeveloped area at one time (as defined by the recreation setting). A PAOT provides no information about how long a person stays at a site or area, nor does it consider the activities people may engage in at the site or area.

PAOT-days represent the capacity of a site or area for its season of use. It is a management tool that integrates the physical capacity of a site or area, with the season of use. PAOT-days for a site/area are calculated by multiplying the site/area’s capacity in PAOTs by the number of days that the site/area is open to use.

Determining the total developed capacity for the Chugach National Forest is straightforward. For example, a campsite in a developed campground has a capacity of 5 PAOTs. The campground is open for 110 days. The PAOT-days for the campsite are: 5 PAOTs times 110 days equals 550 PAOT-days. If there are 100 campsites in the campground, the total capacity of the campground is 55,000 PAOT-days. The sum of the seasonal capacities for all developed sites on the Forest is the total developed recreation capacity.

Calculating the capacities of dispersed areas is not as straightforward. Capacity in undeveloped areas is directly related to the recreation setting and expectations users have for a given setting. For visitors, these expectations are often based on tourism marketing efforts that promote Alaska as vast wildlands with no people (Colt et al. in press). While there is much truth to that image, many “wild” areas have more people using them than many visitors expect.

Capacities for these undeveloped dispersed areas are based on methodology provided in the ROS Book (USDA Forest Service 1986). The ROS Book provides a range for numbers of people per acre for each setting, referred to as capacity coefficients. This range of capacity coefficients was developed in Colorado. Given people’s expectations as to the character of lands in Alaska, we used the lower end of this range for establishing the capacities of Primitive and Semi-primitive settings on the Chugach National Forest, where providing a relatively greater degree of “wild” character is desired. A capacity midway in the range is used for Roaded and Rural settings on the Forest where higher concentrations of people are consistent with a lesser degree of “wild” character.

Capacity coefficients are expressed as number of people per acre. Multiplying the coefficient by the total acres in an area results in “people at one time” for that area. The capacity coefficients used for calculating dispersed area capacities on the Chugach National Forest are as follows:

Primitive and Primitive II	Semi-primitive, Nonmotorized or Motorized	Semi-primitive Groups	Roaded Natural	Roaded Modified	Rural
0.002	0.008	100 ¹	1.3	1.3	4.2

¹ For areas in the Semi-primitive, Groups ROS class, the total number of PAOTs is displayed.

Note: Total PAOTs rather than a capacity coefficient are displayed for the ROS class named Semi-primitive Groups. This ROS class is unique to the Chugach National Forest; therefore, no coefficients have been developed for it. The existing Semi-primitive ROS classes provide settings that are characterized by a low number of people and few developments. A recreation experience that tourism providers are marketing are visits to an essentially wild setting as part of a group of up to 100 people. The Semi-primitive Groups class was developed during the planning process in response to this emerging form of tourism. It is used at selected sites in several alternatives and is included in developing capacity estimates for alternatives. The Semi-primitive Groups ROS class is intended to be no more than 50 acres in size, and is more fully described in Table 3-54.

Although the Chugach National Forest encompasses about 5½ million acres, much of this large land area is functionally unusable by most people because of remoteness, steepness, impenetrable vegetation, or expense of access. Calculating capacities without taking into account the suitability of the land for recreation would result in unrealistically high capacities. To reflect a reasonable capacity on the Forest, a model was developed to identify only those areas that are usable by a majority of recreationists. The assumptions used in developing the model are as follows:

- Recreation use is concentrated along and within ½ mile of roads, trails, water routes, and within one mile of cabins.
- Recreation users have a preference for alpine settings and water bodies and will travel further than ½ mile in order to reach highly desirable locations.
- Recreation users will generally avoid areas with dense, almost impenetrable vegetation such as alder thickets.
- In Prince William Sound, users seldom travel higher than the 200-foot elevation.
- Recreation users do not venture on to steep terrain and glaciers.

With GIS technology, these assumptions were applied to the Chugach National Forest land base, creating a map that displays suitable areas across the Forest by their existing ROS setting. The model is used to show varying capacities by alternative.

Recreation Use

For the purposes of displaying existing use levels occurring at Forest recreation facilities and dispersed areas, data from the Forest Service's Infrastructure (INFRA) database was used (USDA Forest Service 1998c). The most recent data available is from 1998 and is used in projecting future use. Prior to INFRA, a system known as Recreation Information Management (RIM) was used. RIM data is available for 1989 to 1996. However, starting in 1996, there were significant changes in data collection and computation methods for dispersed activities. Because new definitions and methodologies were used after 1996, the RIM and INFRA data sets cannot be used together to develop information about trends in dispersed recreation use over time. Although, the use data for fee sites, such as campgrounds and cabins, are based on actual counts allowing the data to be compared over many years.

Nationally, the Forest Service has begun collecting recreation use information in a completely new way. The new system, known as the National Visitor Use Monitoring project, is a sampling approach that will generate forest-level use information with a statistically defined level of accuracy. The Chugach National Forest began implementing this new system in 2001, so no data is yet available for use in this analysis.

The collection of recreation and tourism use data is not an exact science. Except for locations where fees are collected or where people can be counted cost efficiently, most of the use data is based on long-term observations, anecdotal information, and professional estimates, adjusted with quantitative indicators where available. Consequently, use data for developed facilities, such as campgrounds, cabins, and visitor centers, based on actual counts of visitors, is very reliable. Data for activities such as sightseeing is partially inferred from traffic counts, with somewhat greater potential for error. The most difficult type of use to enumerate is backcountry use. Estimates are based on sources such as trail counters and trail registers, which quantifies only a portion of the total use. In summary, only certain activities or sites have new data collected every year. All other use data is updated annually from the previous year's data using information on changes in statewide or regional tourism levels, indexed with the new data recorded in those areas actually counted each year, and by observations from field personnel or anecdotal information from knowledgeable individuals (Colt et al. in press).

Existing Recreation Situation by Geographic Area

In this section, the existing recreation situation for each of the three major geographic areas of the Chugach National Forest is described: Kenai Peninsula, Prince William Sound, and Copper River Delta. For each area, the description includes the general character of the area; types of recreation activities

occurring; the available recreation facilities and their capacities; the range of inventoried settings and their capacities; commercial recreation activities and opportunities; and, a summary of important Recreation/Tourism Interests and Situations.

Kenai Peninsula

Character

The Kenai Peninsula (the Kenai) offers a classic “Alaskan” experience reasonably accessible to large numbers of people. Every year, hundreds of thousands of residents and tourists are attracted to the Kenai Peninsula by its grand scenery, opportunities for viewing fish and wildlife, a multitude of recreation activities available along its trails, roads and at developed facilities, and world class sportfishing.

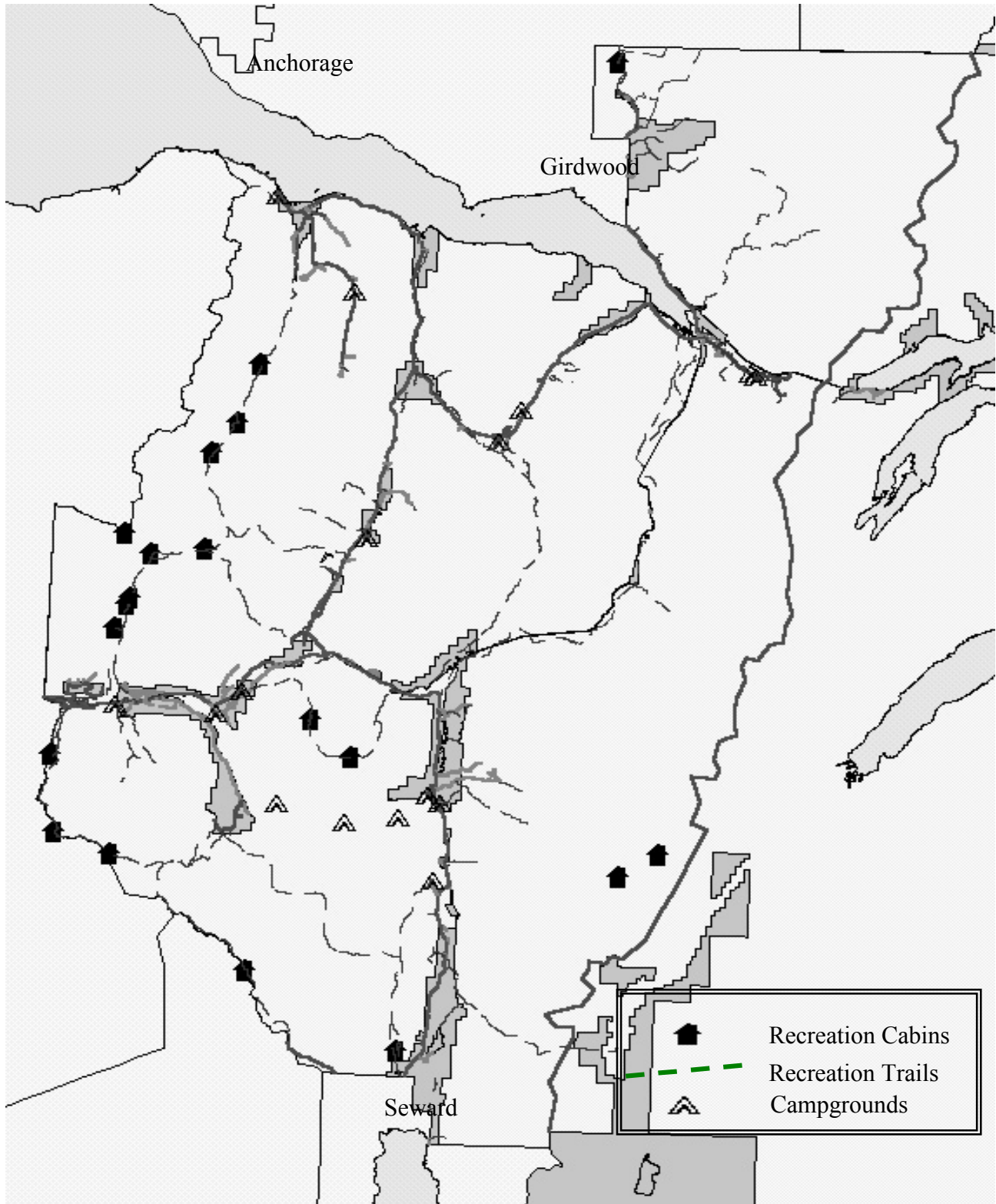
Compared to the Forest’s other two geographic areas, the Kenai Peninsula has a substantial infrastructure. Almost all of the major valleys have a road, trail, or railroad. The Seward Highway, the only road south from Anchorage, winds through the heart of the eastern Peninsula. It was recently designated one of the nation’s few All-American Roads in recognition of its outstanding scenic quality, historic significance, and recreation opportunities. The Sterling Highway branches off the Seward Highway and provides access to Cooper Landing and beyond. A variety of recreation facilities are concentrated along the road system (Figure 3-53).

The overall character of the eastern Kenai Peninsula is essentially wild. The steep mountains, rivers and glaciers, and a relatively small road and trail system for the size of the land base limit access to many undeveloped backcountry areas. The result is concentrated use in valley bottoms or along corridors where access is available and recreation facilities are located. Recreation settings range from areas of major development and high concentrations of people along the road and trail corridors, to remote, undeveloped areas in the backcountry with little use and no development.

Recreation activities on the Kenai Peninsula are the most diverse of any of the geographic areas. In the summer, the most popular activities are sightseeing, including driving for pleasure, going to Begich, Boggs Visitor Center, viewing fish and wildlife, fishing, camping, and hiking. In the winter, snowmachining and cross-country skiing are the most popular activities.

Because the infrastructure concentrates recreation use on a relatively small part of the land base, major conflicts over access have developed between winter motorized and nonmotorized uses and activities. In the summer, when overall recreation use is higher, this same limited road and trail system has resulted in a concentration of users at developed sites (mainly cabins and campgrounds). The result is use at sites exceeding the capacity for which they were designed.

Figure 3-53: Kenai Peninsula geographic area.



Types of Activities

People participate in a diverse number of activities year-round. Sightseeing, visiting centers such as the Begich, Boggs Visitor Center, and viewing wildlife and fish are by far the most popular year-round activities. In the summer, fishing, hiking and camping, in descending order, are the next most popular. In winter, snowmachining and cross-country skiing are most popular. Table 3-55a displays total annual visits to the Forest for recreation activities on the Kenai Peninsula in 1998.

Table 3-55a: Recreation visits by activity - Kenai Peninsula.

Recreation Activity	Total Visits Developed Sites	Total Visits Dispersed Areas	Total Visits Kenai Peninsula
Sightseeing	341,278	2,719,142	3,060,419
Visitor center, nature education	1,219,651	26,262	1,245,913
Wildlife/fish Viewing	163,459	409,487	572,946
Fishing	22,865	350,960	373,825
Hiking	29,094	326,550	355,644
Cross-country skiing	137,529	52,438	189,967
Primitive camping	0	161,983	161,983
Snowmachining	121,182	38,612	159,794
Developed camping	121,033	0	121,033
Picnicking	4,510	71,353	75,863
OHV, ATV, 4WD	69	37,047	37,116
Berry picking	2,800	32,657	35,457
Backpacking	0	33,687	33,687
Hunting	4,094	12,943	17,037
Biking	2,317	9,558	11,875
Canoe/raft/floating	39	5,135	5,174
Cabins	3,957	0	3,957
Motorboating	118	3,394	3,512
Climbing	0	1,055	1,055
Other	166,296	77,070	243,366
Total	2,340,290	4,369,333	6,709,623

Source: USDA Forest Service 1998 INFRA database (USDA Forest Service 1998c).

Existing Infrastructure and Capacity

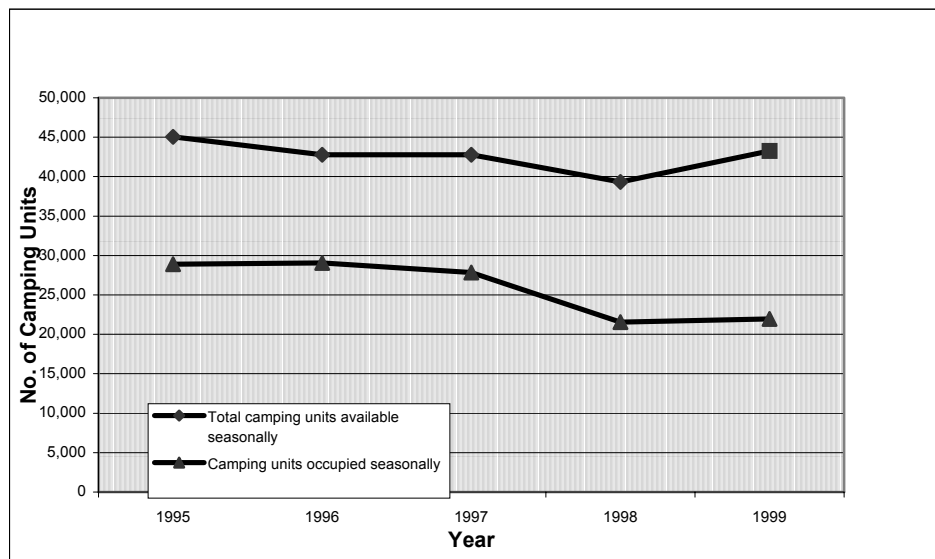
The Kenai Peninsula has several state highways, numerous hiking trails, all of the Forest Service's developed campgrounds, and 19 of the Forest's recreation cabins. Except for recreation cabins, developed facilities are located along the road corridor. There are 415 developed campsites for tents, RVs or trailers; 17 day-use sites, including the most visited place in Alaska, Portage Glacier and the Begich, Boggs Visitor Center; and, 345 miles of trails, of which 80 percent are open to winter motorized use. The developed recreation infrastructure and capacity for the Kenai Peninsula is shown in Table 3-55b.

Table 3-55b: Developed recreation infrastructure and capacity - Kenai Peninsula.

Measures of Capacity and Use	Facility Types					
	Campgrounds	Cabins	Day Use Sites	Trailheads	All Trails	Winter Motorized Trails
PAOT-days	577,297	43,380	549,719	44,272		
No. of facilities	14	19	17	18		
No. of camping units	415					
No. of camping units or cabin nights available during season	44,172	5,844				
No. of camping units or cabin nights occupied during season	22,948	2,136				
No. of trails					64	n/a
Miles of trails					362	267

Source: USDA Forest Service 1998 INFRA database (USDA Forest Service 1998c), Cabin reservation reports (2000), Campground use reports (2000).

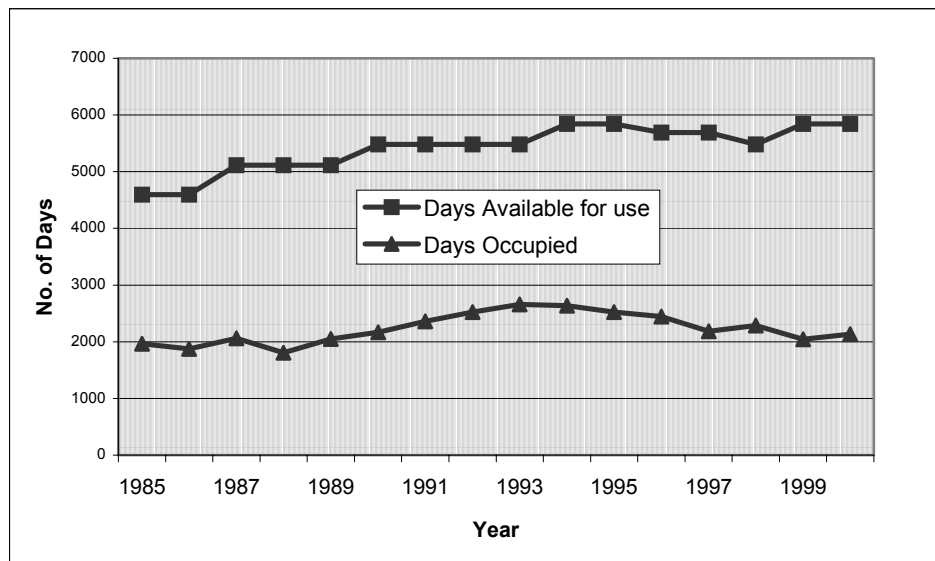
A review of records provided by the campground concessionaire show that from Memorial Day to Labor Day, campgrounds are at or near 100 percent occupancy, with use falling off significantly before Memorial Day and after Labor Day. Over the season, campground occupancy ranges from 40 to 60 percent (Figure 3-53a). Generally accepted management practices for recreation facilities consider a 60 percent occupancy average to be the maximum for a facility.

Figure 3-53a: Campground occupancy - Kenai Peninsula.

Source: Campground Concessionaire Use reports.

Recreation cabins along the Resurrection Pass and the Barber Cabin are typically fully reserved from Memorial Day to Labor Day. Other cabins on the Kenai Peninsula are only slightly less full. Spot checks of the cabin reservation calendars in May 2001 showed that only scattered days were still available for reserving in the months of June, July and August. The annual occupancy rate for Kenai Peninsula cabins is about 40 to 50 percent. Cabins are available for rental year round, but occupancy rates are calculated based on the season of actual use. Although most cabins are nearly 100 percent occupied during the three summer months, cabins receive some shoulder season (spring and fall) and winter use, accounting for a lower annual occupancy rate.

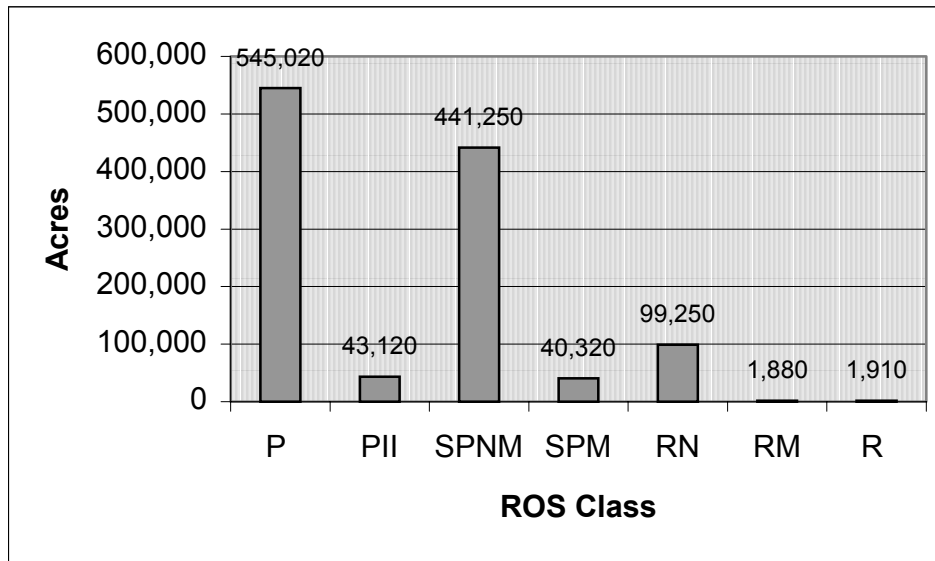
Figure 3-53b: Cabin occupancy - Kenai Peninsula



Range of Inventoried Settings and Capacity.

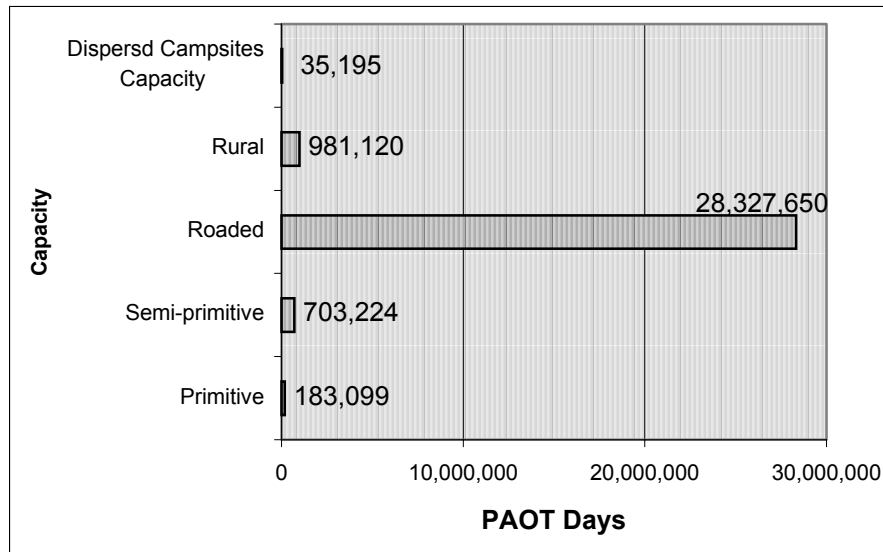
The entire spectrum of recreation settings available on the Chugach National Forest can be found on the Kenai Peninsula, Figure 3-53c. Along the road corridors, the Roaded Natural ROS class is consistent with the relatively high use and development level found along the road system. A Rural ROS class occurs at Portage Glacier and the Begich, Boggs Visitor Center due to the very high levels of use and multi-million dollar facilities at that location. There are no areas on the Chugach National Forest that meet the definition of Urban ROS class.

Figure 3-53c: Inventoried ROS classes – Kenai Peninsula.



As displayed in Figure 3-53d the overall dispersed recreation capacity is 30,313,013 PAOT-days, based on the Kenai Peninsula's season of 365 days.

Figure 3-53d: Recreation capacities of dispersed areas – Kenai Peninsula.



Interests and Situations

The Kenai Peninsula is located within an hour's drive of half Alaska's population and two-thirds of visitors to Alaska. The accessibility and large numbers of people wanting to recreate on the Kenai Peninsula have led to the most intense conflicts among users and interests on the Chugach National Forest:

- motorized and nonmotorized winter recreation opportunities, including snowmachining, heli-skiing, cross-country skiing, and natural quiet;
- concentrations of people at developed recreation sites, especially campgrounds and cabins, exceeding available capacity; and,
- need for additional recreational access, for both winter and summer activities.

Prince William Sound

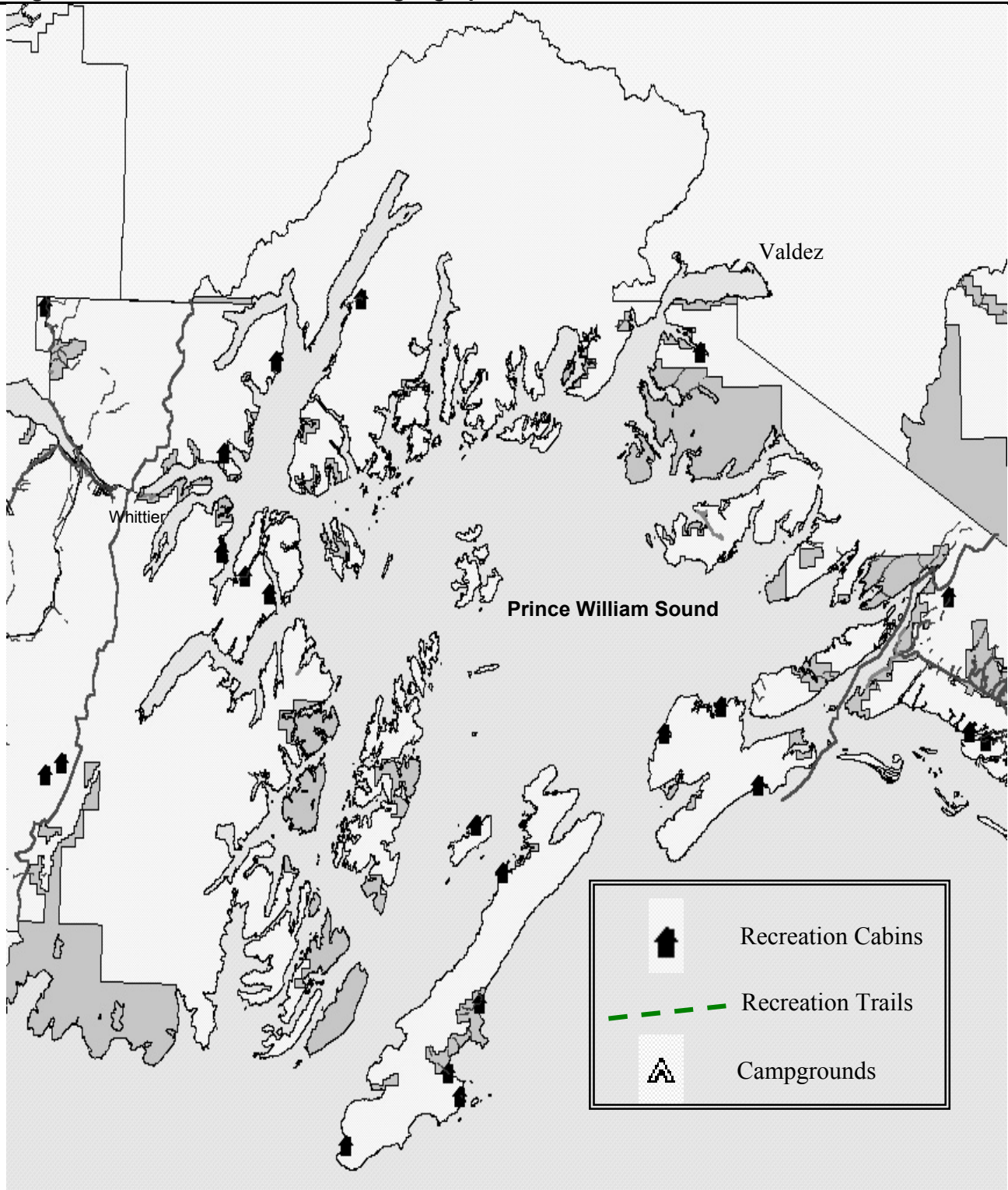
Character

Prince William Sound, one of the largest saltwater sounds in the world, is a land of spectacular scenery (See Figure 3-54). With the Chugach Mountains providing a backdrop of perennially snow covered 13,000-foot peaks, the narrow fiords and tidewater glaciers, old growth forests and alpine tundra, create breathtaking scenery. On land can be found black bear, brown bear, mountain goats, Sitka black tailed deer, nesting shorebirds, and haul outs for Stellar sea lions. In the marine waters swim Orcas, humpback whales, Dall porpoises, sea lions, harbor seals, and all five species of Pacific salmon. Wild and remote with no roads and access only by watercraft, floatplane or helicopter, recreation settings are primarily undeveloped and dispersed. All activities are strongly marine oriented, with the Chugach National Forest providing the backdrop for both water and land based activities.

Access to Prince William Sound is primarily from the water, with recreation use concentrated along the shorelines primarily during the summer months. Whittier is the most popular point of access given its proximity to Anchorage, followed by Valdez and Cordova on the eastern side of the Sound.

The western half of Prince William Sound is the congressionally designated Nellie Juan-College Fiord Wilderness Study Area (ANILCA, Section 702). Specific direction is to maintain the existing wilderness character until Congress acts on permanent Wilderness designation or releases the area from Wilderness Study.

Figure 3-54: Prince William Sound geographic area.



Types of Activities

Not surprisingly given the Sound's spectacular scenery and world class wildlife, sightseeing and watching or photographing wildlife are the two top activities in the summer. Large, ocean-going cruise ships and smaller day cruise boats provide a high percentage of the scenery and wildlife viewing opportunities. A modest visitor center located in Valdez generates a substantial amount of visitation, due to its location on the Richardson Highway and good salmon viewing on site. At significantly lower levels are activities such as hiking, fishing, and hunting, as well as kayaking (tallied under "backpacking" in Table 3-55c).

Table 3-55c: Recreation visits by activity - Prince William Sound.

Recreation Activity	Total Visits Developed Sites	Total Visits Dispersed Areas	Total Visits Prince William Sound
Sightseeing	2,443	543,340	545,783
Visitor center, nature education	173,177	0	173,177
Wildlife/fish Viewing	70,980	150,072	221,052
Fishing	181	19,248	19,429
Hiking	0	22,273	22,273
Cross-country skiing	0	153	153
Primitive camping	0	900	900
Snowmachining	0	0	0
Developed camping	0	0	0
Picnicking	0	10,823	10,823
OHV, ATV, 4WD	0	0	0
Berry picking	34	11,216	11,250
Backpacking	0	6,728	6,728
Hunting	247	5,484	5,730
Biking	0	0	0
Canoe/raft/floating	184	403	586
Cabins	845	0	845
Motorboating	945	0	945
Climbing	0	197	197
Other	10	14,084	14,094
Total	249,044	784,920	1,033,964

Source: USDA Forest Service 1998 INFRA database (USDA Forest Service 1998c).

Existing Infrastructure and Capacity

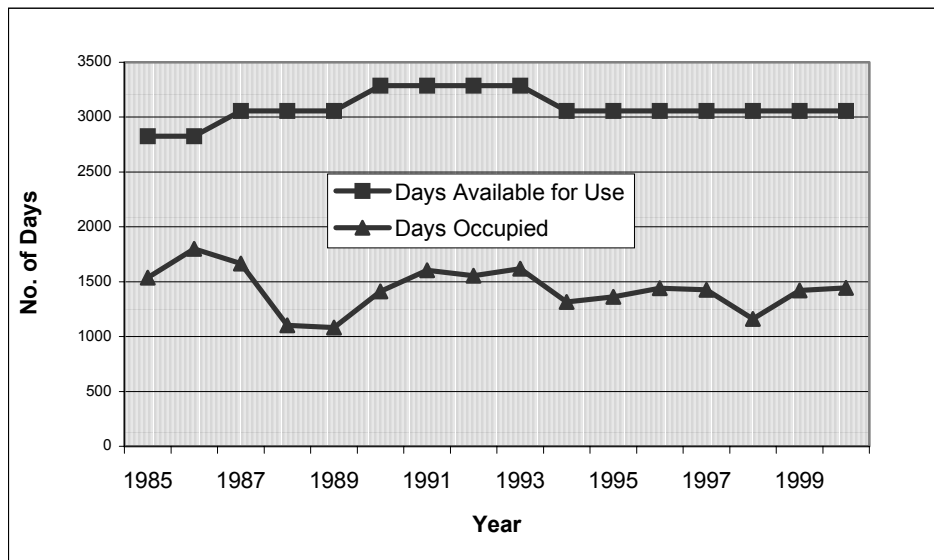
The Prince William Sound geographic area has a very limited infrastructure on the Forest, consisting of a few short, primitive hiking trails, no developed campgrounds, and 16 of the Forest's recreation cabins (Table 3-55d).

Table 3-55d: Developed recreation infrastructure and capacity – Prince William Sound.

Measures of Capacity and Use	Facility Types					Winter Motorized Trails
	Campgrounds	Cabins	Day Use Sites	Trailheads	All Trails	
PAOT-days	0	33,766	11,900	0		
No. of facilities	0	16	1	0		
No. of camping units	0					
No. of camping units or cabin nights available during season	0	3,288				
No. of camping units or cabin nights occupied during season	0	1,444				
No. of trails					40	0
Miles of trails					88	0

Source: USDA Forest Service 1998 INFRA database (USDA Forest Service 1998c), Cabin reservation reports (2000), Campground use reports (2000).

Recreation cabins near Whittier are typically reserved well in advance from Memorial Day to Labor Day. Other Prince William Sound cabins are generally less full except for specific periods associated with a salmon run or hunting season. Figure 3-54a shows occupancy at 40 to 50 percent for the entire year. Checks of the cabin reservation calendars in May 2001 show that only scattered days are available for renting cabins in western Prince William Sound during the months of June, July and August.

Figure 3-54a: Cabin occupancy – Prince William Sound.

There are no developed campgrounds in Prince William Sound, but there are over 300 user-developed dispersed campsites. Despite this large number of camping sites, several areas in the Prince William Sound are so popular that camping sites, such as Blackstone Bay, Harriman Fiord, and Culross Passage, are in high demand and consequently limited in availability.

Range of Inventoried Settings and Capacity

Prince William Sound is predominantly in the Primitive and Semi-primitive recreation settings as shown in Figure 3-54b. As a result, the capacity for dispersed recreation is correspondingly low, compared to the Kenai Peninsula. The overall capacity, based on the inventoried ROS settings and the suitable land area, is 9,213,152 PAOT-days, given a recreation use season in Prince William Sound of 200 days (Figure 3-54c).

Figure 3-54b: Inventoried ROS classes – Prince William Sound.

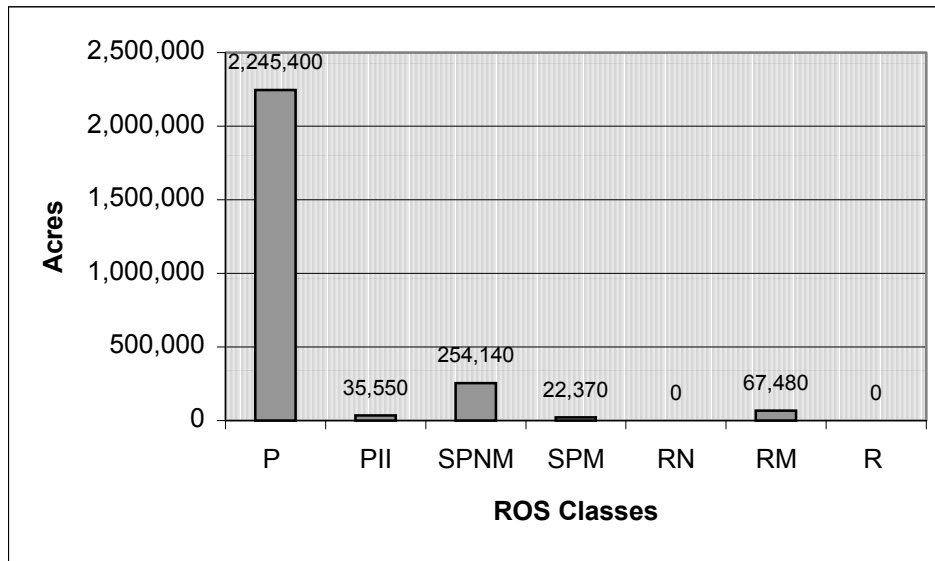
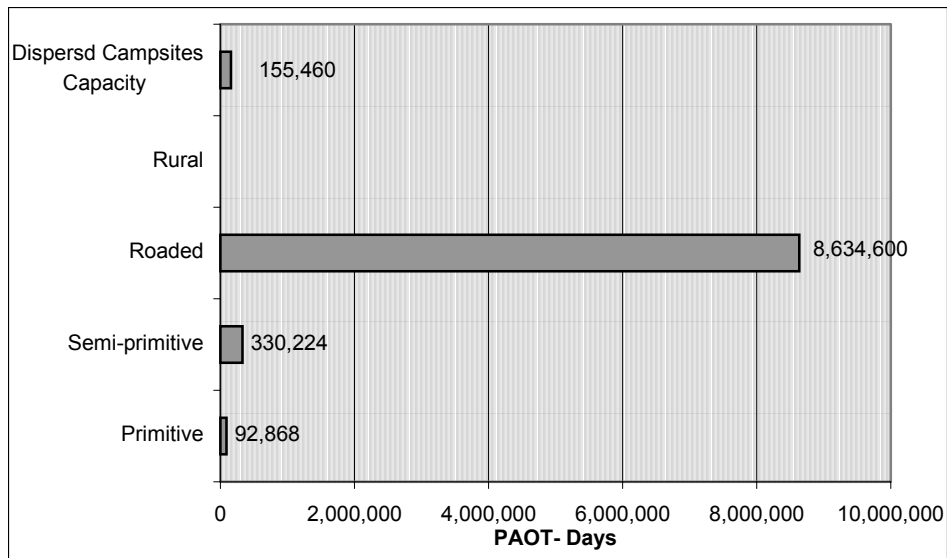


Figure 3-54c: Recreation capacities of dispersed areas – Prince William Sound



Interests and Situations

Prince William Sound has been managed to maintain the wild character of the area, both inside and out of the Wilderness Study Area. Significant interests for Prince William Sound revolve around:

- Maintaining the wild and natural character of the Sound, both inside and out of the Wilderness Study Area, including managing people's impacts on wildlife.
- Accommodating increased dispersed recreation pressures as a result of the new road to Whittier and anticipated increase in recreation and tourism visitors.
- Concentrations of people at developed recreation cabin sites exceeding available capacity.
- Need for additional recreational access away from areas of concentration and along shorelines.

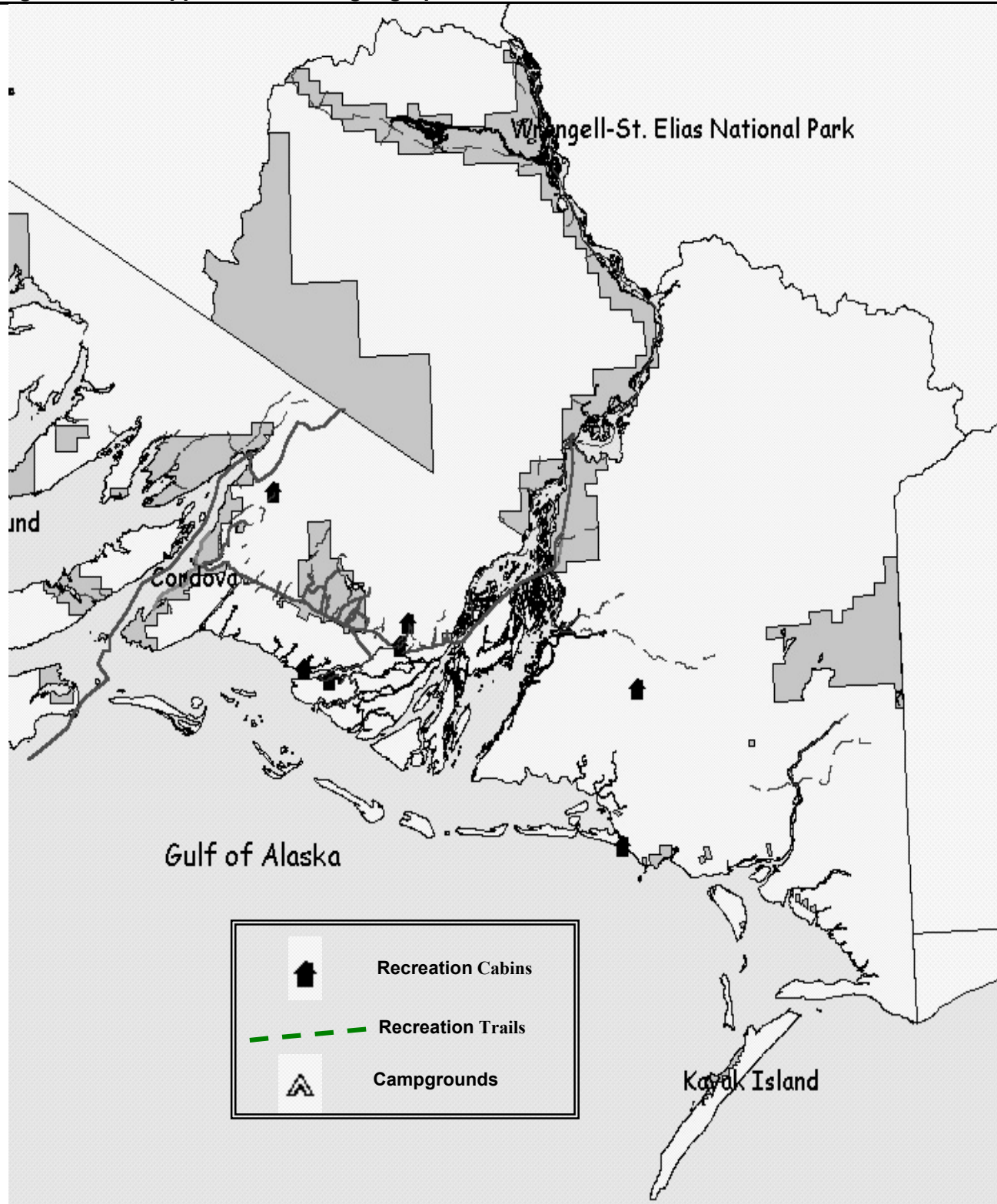
Copper River Delta

Character

Encompassing the eastern end of the Chugach Mountain range and the expansive delta of the Copper River is one of the richest wildlife areas of the world (Figure 3-55). Combined with spectacular scenery, massive valley glaciers, and wild and remote settings, the Copper River Delta is one of the premier and most challenging areas for primitive recreation on the west coast of North America.

The Copper River Delta is not connected to the rest of the state's road system; hence access is via the Alaska State Marine Highway to Cordova, commercial airline, and private aircraft and boats. The isolation and expense of access results in relatively low use levels compared to the rest of the Chugach National Forest. A 50-mile long primarily gravel road extends from Cordova on the Gulf of Alaska northeasterly to Childs Glacier in the rugged Chugach Mountains. All developed recreation opportunities are located along this road corridor, except for isolated recreation cabins.

Figure 3-55: Copper River Delta geographic area.



Types of Activities

Recreation use occurs primarily during the summer months along the road system with sightseeing, viewing nature, fishing, hiking, and picnicking being the most popular activities (Table 3-55e). Hunting is also one of the more popular activities. Winter use is very limited, however, as the road is not maintained past the airport (Mile 13).

Table 3-55e: Recreation visits by activity - Copper River Delta.

Recreation Activity	Total Visits Developed Sites	Total Visits Dispersed Areas	Total Visits Copper River Delta
Sightseeing	54,338	61,879	116,217
Visitor center, nature education	120,094	0	120,094
Wildlife/fish Viewing	5,111	6,692	11,803
Fishing	2,022	16,850	18,871
Hiking	8,026	16,304	24,330
Cross-country skiing	357	2,000	2,357
Primitive camping	0	4,882	4,882
Snowmachining	357	4,433	4,789
Developed camping	101	0	101
Picnicking	2,642	10,251	12,894
OHV, ATV, 4WD	0	1,828	1,828
Berry picking	6	2,123	2,128
Backpacking	0	3,964	3,964
Hunting	1,126	11,766	12,892
Biking	0	188	188
Canoe/raft/floating	770	4,101	4,871
Cabins	1,760	0	1,760
Motorboating	179	5,057	5,236
Climbing	0	111	111
Other	0	3,002	3,002
Total	196,888	155,430	352,318

Source: USDA Forest Service 1998 INFRA database (USDA Forest Service 1998c).

Existing Infrastructure and Capacity

The Copper River Delta has a very limited infrastructure (Table 3-55f). Developed facilities are located along the road corridor between Cordova and Childs Glacier. There are only five developed campsites for tents in one campground; 13 day-use sites, including the Million Dollar Bridge and Childs Glacier viewing sites; and, 66 miles of trails, many of which are maintained to a primitive standard.

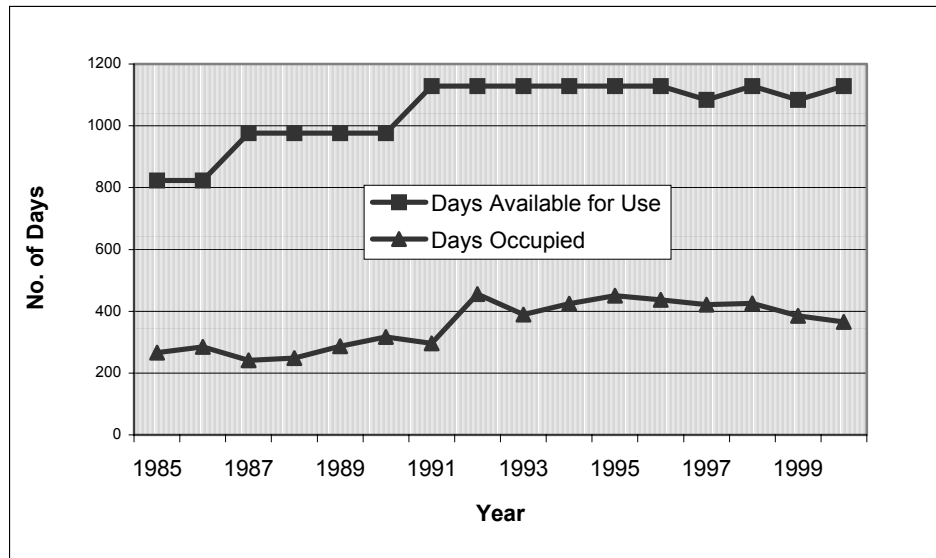
Table 3-55f: Developed recreation infrastructure and capacity - Copper River Delta.

Measures of Capacity and Use	Facility Types					
	Campgrounds	Cabins	Day Use Sites	Trailheads	All Trails	Winter Motorized Trails
PAOT-days	3,825	16,434	77,646	33,072	-	-
No. of facilities	1	8	13	9	-	-
No. of camping units	5	-	-	-	-	-
No. of camping units or cabin nights available during season	n/a	1,129	-	-	-	-
No. of camping units or cabin nights occupied during season	n/a	365	-	-	-	-
No. of trails	-	-	-	-	37	0
Miles of trails	-	-	-	-	105	78

Source: USDA Forest Service 1998 INFRA database (USDA Forest Service 1998c), Cabin reservation reports (2000), Campground use reports (2000).

Recreation cabins are typically reserved in association with specific fishing or hunting seasons (Figure 3-55a). Outside of these seasons, use is very low, except for the McKinley Trail Cabin, located just off the Copper River Highway.

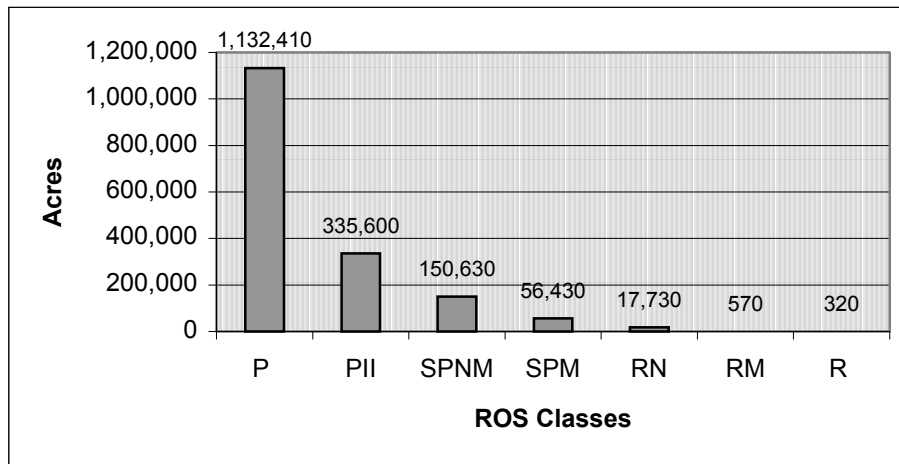
Figure 3-55a: Cabin occupancy - Copper River Delta.



Range of Inventoried Settings and Capacity

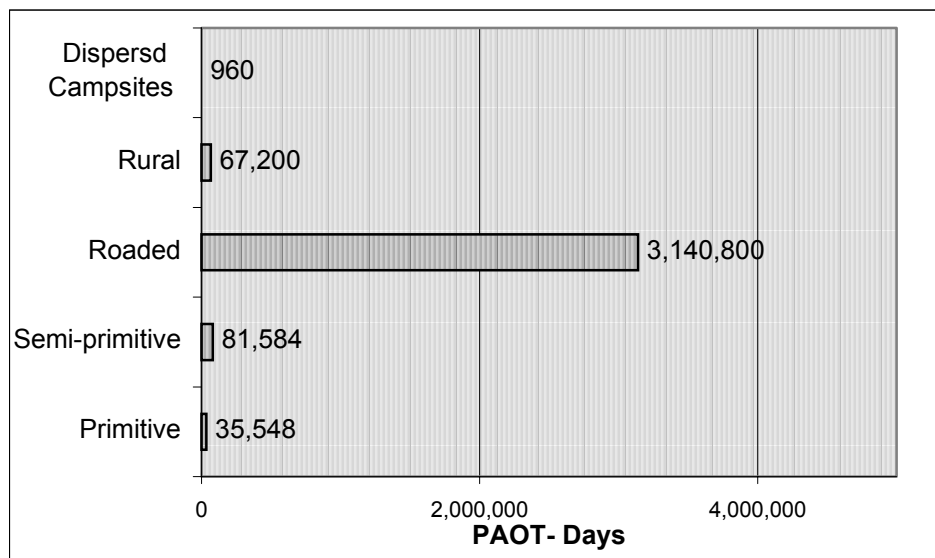
The Copper River Delta is much like Prince William Sound in being very wild and remote in character. Opportunities for Primitive and Semi-primitive recreation opportunities are very high (Figure 3-55b). Along the Copper River Highway between Cordova and Childs Glacier, the Roaded Natural ROS setting allows for relatively high use and development of facilities.

Figure 3-55b: Inventoried ROS classes – Copper River Delta.



Much of the Copper River Delta is Primitive and Semi-primitive ROS settings. As shown in Figure 3-55c, the capacity for dispersed recreation is correspondingly low, especially away from the Copper River Highway. The overall capacity, based on the inventoried ROS settings and the suitable land area available, is 3,326,092 PAOT-days, given a use season of 200 days.

Figure 3-55c: Recreation capacities of dispersed areas - Copper River Delta.



Interests and Situations

Although remote, the Copper River Delta is nationally prominent due to its rich fish and wildlife resources; proposals by the state to build a road or trail from Childs Glacier to Chitna; and proposals by private landowners to develop their resources with necessary access across National Forest System lands. Local interests are concerned that increased recreation uses could adversely affect their lifestyles.

Projections of Recreation Use

To evaluate the alternatives' responses to the Recreation/Tourism Situation Statement, both the current and future supply of recreation opportunities, as well as the current and future demand for recreation opportunities, need to be analyzed. In this section, the demand side is described by examining available information about current and projected participation in recreation activities.

In the following sections, people's participation in recreation activities nationally, statewide, and on the Chugach National Forest is characterized by describing results from a variety of recreation surveys. The best available information was then used to project future participation in recreation activities on the Chugach National Forest.

Recreation research, at its most basic, is a matter of studying the behavior of human beings. People's behavior is the external manifestation of complex internal decision-making. Measuring current behavior and using it, as a basis for predicting future behavior, can be very challenging. Recreation research, in general, has some widely shared inadequacies that arise from lack of consistency in definitions, lack of information about supply or capacity effects on demand, and lack of information about the effect of quality of experience on demand (Brooks and Haynes 2001). Nevertheless, several sources of information provide a reasonable overview of the current situation and a basis for projecting the future of recreation and tourism on the Chugach National Forest.

Recreation surveys commonly use three measures of recreation participation. One of the most common measures is **recreation participation**, also referred to as participation rates. Recreation participation is generally presented as a **percentage participation** in a recreation activity. In other words, recreation participation is the percentage or proportion of the population that participates at least once per year in a particular recreation activity. For example, 72 percent of Alaskan adults reported that they viewed wildlife at least one time in the year prior to being surveyed in the 1995 National Survey on Recreation and the Environment (Cordell et al. 1999).

Another measure of participation is **frequency of participation**, also termed "consumption". Frequency measures the number of times a person participates in an activity during the year. As an example, Alaskans, on average, viewed wildlife 28 times a year according to the Statewide Comprehensive Outdoor Recreation Plan of 1997 (Alaska Department of Natural Resources, Division of Parks and Outdoor Recreation 1999). By multiplying this average frequency by

the total population, the total number of times people participate can be calculated.

The third measure, also a measure of frequency, is **number of primary purpose trips**. This measures the number of trips that a person makes annually for the primary purpose of participating in a particular recreation activity. For example, wanting to view wildlife got Alaskans out of the house an average of seven times per year.

In considering these measures of recreation participation, it can be deduced that almost three-quarters of Alaskan adults view wildlife at least once in a year, or they actually viewed wildlife 28 times in a year. However, viewing wildlife was their primary purpose for recreating only seven times a year. In other words, Alaskans viewed wildlife more often as a secondary activity while they were out recreating for some other primary purpose such as fishing with 22 primary purpose trips a year.

In developing projections for recreation use on the Chugach National Forest in 2010, the 1998 INFRA data for number of visits annually in each recreation activity was used. Total visits are a measure of frequency. To project number of visits to the Chugach National Forest by 2010, projections of the total number of times participating and a frequency measure, available in the work by Bowker and others (1999), were used. Only present projections to 2010 for this frequency measure are discussed here, although Bowker and others (1999) also provide projections to 2020 for participation percentages and number of primary purpose trips.

This discussion on recreation use projections is organized into the following topics:

- Information Sources for Recreation Use Data
- National Recreation Use and Projections
- Alaskan Recreation Use and Projections — Alaskan Residents
- Alaskan Recreation Use and Projections — Alaska Visitors
- Chugach National Forest Recreation Use
- Summary of Recreation Patterns
- Projections of Visits for Chugach National Forest

Information Sources for Recreation Use Data

For national level information on people's participation in outdoor recreation, we used the National Survey on Recreation and the Environment (NSRE) of 1995. The NSRE is a national recreation survey, which has been conducted by the federal government since 1960. Its data was used in an assessment of participation patterns and levels of participation across recreation activities. Results of the 1995 NSRE were published by Cordell and others, as Chapter V in "Outdoor Recreation in American Life: A National Assessment of Demand and Supply Trends" (Cordell et al. 1999). Projections of future participation in

recreation nationally were published as Chapter VI in this same book by Bowker and others (1999). (Although the NSRE was also conducted in 2000, projections for future participation have not yet been published.)

Results from the 1995 NSRE were also published in 1997 by Cordell and others in "Outdoor Recreation in the United States: Results from the National Survey on Recreation and the Environment. A Report for USDA Forest Service Recreation Managers and Planners" (Cordell et al. 1997). This publication includes comparisons between the national data and data for Alaska.

The Statewide Comprehensive Outdoor Recreation Plan of 1997 (SCORP) provides an inventory of outdoor recreation needs, trends, and issues in Alaska (Alaska Department of Natural Resources, Division of Parks and Outdoor Recreation 1999). Part of this planning process included a survey of 600 Alaskan households randomly selected to discover what recreation activities they currently participate in.

Information about trends in the U.S. population was primarily obtained from the U.S. Department of Commerce, Bureau of the Census (1996). The Forest Service also commissioned three studies to compile and analyze the best available information regarding current recreation and tourism and its future on the Chugach National Forest.

The first study is titled "Recreation and Tourism in Southcentral Alaska: Patterns and Prospects" by Colt and others (in press). The report's purpose is to describe the nature and extent of recreation and tourism activities in Southcentral Alaska and specifically on the Chugach National Forest. The report considers current levels of such activities, past trends in these activities, and future prospects for change. The authors used a variety of data sources from the region for the past ten years, when available, along with semi-structured interviews with 120 key informants. Colt and others used the different sources to supplement each other, resulting in aggregate data that is more informative than the individual sources (Brooks and Haynes 2001).

The second study is "Outdoor Recreation Participation and Use by Alaskans: Projections 2000-2020" by J. M. Bowker for the Pacific Northwest Research Station, U.S. Forest Service (Bowker 2001). Its research objectives were to "(1) estimate Alaska State level participation and use across a number of popular outdoor recreation activities, (2) estimate nonresident participation in wildlife related recreation in Alaska, and (3) provide forecasts of participation and use for the above two objectives at ten-year intervals through the year 2020."

Bowker used three sources of data to meet these objectives, including the 1997 Alaska Statewide Comprehensive Outdoor Recreation Plan; the 1996 National Survey of Fishing, Hunting, and Nonconsumptive Wildlife-Associated Recreation; and the 1995 National Survey on Recreation and the Environment. These data sources are origin-based recreation surveys. In this type of survey, a sample of households is surveyed to obtain information about people's recreation preferences and behavior, but generally no data is solicited about where the people recreate. Therefore, there is no way to determine whether, or how often,

a person participated in a recreation activity in a specific location such as the Chugach National Forest (Bowker 2001). However, Bowker states “enough information is available to generally assess participation and use levels for Alaskans across a wide range of outdoor recreation activities and for tourists in wildlife related activities.”

David Brooks and Richard Haynes provided a third report titled “Recreation and Tourism in Southcentral Alaska: Synthesis of Recent Trends and Prospects” (2001). This report is designed to “highlight the findings of Colt and Bowker; place these findings in a larger context; identify both linkages and gaps in the information they provide; and draw broad-scale conclusions.” The authors note that the two studies do not address some important questions identified in the Analysis of the Management Situation (USDA Forest Service 1998b): they do not describe the management plans of adjacent public and private landowners; they do not provide an analysis of capacity (supply); and, they do not integrate the concept of quality of experience into demand analysis. As noted earlier, these shortcomings are not unique to these studies and are not barriers to providing a “contemporary review of trends and prospects for this sector” (Brooks and Haynes 2001). Also lacking are projections for visitors’ recreation activities while in Alaska, with the exception of fish and wildlife related recreation, due to the lack of survey information about nonresidents’ participation in the entire range of recreation activities while visiting Alaska.

Finally, the staff of the Chugach National Forest conducted an on-site survey of recreation users in 1995, called Recreation Survey ‘95 (Reed 1995). The self-administered questionnaire resulted in almost 2500 responses during the summer of 1995. The survey’s objectives were to collect information regarding demographics; recreation activity participation; management actions and services most important and satisfactory to recreationists; and people’s perceptions of current Forest management practices. Some of the limitations of the survey include its timeframe of mid-June through mid-September, which means winter sports and hunting are underrepresented. Dispersed recreationists may also be underrepresented, due to the methodology of distributing the questionnaires. Because this survey was designed to survey on-site visitors to the Forest, it can only be generalized to that group of people. Unlike the NSRE, it was not designed as a random survey of all possible households that might use the Forest.

National Recreation Use and Projections

The purpose of looking at national level data is to understand recreation activities of the U.S. population as a whole. The majority of visitors to Alaska are from the United States. Additionally, national level data is used in projections of visitors’ activities while in Alaska due to the lack of Alaska-specific data about visitors’ recreation preferences.

The 1995 National Survey on Recreation and the Environment (NSRE) contains a wealth of information about Americans’ participation in over 80 outdoor activities (Cordell et al. 1997). The activities included in the survey range from

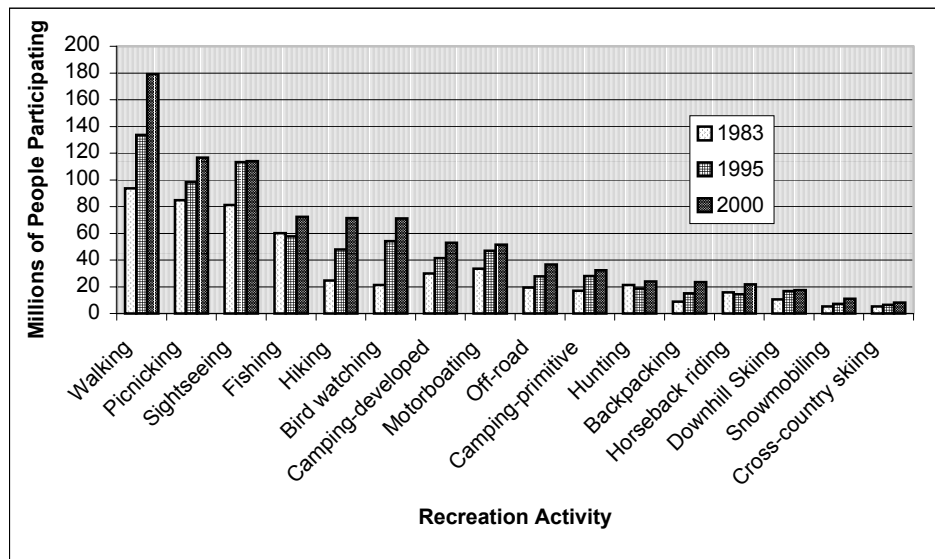
casual walking and sightseeing, to camping and fishing, to whitewater rafting and snowmobiling. Information in the survey comes from telephone interviews with approximately 17,000 Americans 16 years and older, chosen randomly. People were asked questions pertaining to their participation in outdoor recreation activities, and the total number of days annually they spent participating in those activities. The survey does not ask people where they recreate, but only *if* they participated in specific activities at least once in the previous year. For example, a person reporting he or she had picnicked in the previous year is not asked if the picnic was at a local city park or at a beach in another state.

Recreation Participation

Results of the 1995 NSRE show that 94.5 percent of the American population (approximately 189 million people) participated in one or more of the surveyed recreation activities sometime in the 12 months prior to the survey (Cordell et al. 1999). Initial results from the 2000 NSRE show that participation has increased to 97.5 percent of the population (207 million adults) (USDA Forest Service and National Oceanic and Atmospheric Administration 2000).

National recreation surveys from 1983, 1995, and 2000 include data on several recreation activities that can be compared over these time periods. (The 1983 survey data was included in Cordell et al. 1999.) Figure 3-56a displays the number of people participating in these activities in 1983, 1995, and 2000, ranked in descending order of popularity. These same data are presented in tabular form in Table 3-56a following the graph.

Figure 3-56a: Numbers of U.S. adults participating in selected outdoor recreation activities in 1983, 1995, and 2000 (see also Table 3-56a).



Adapted from Table V.10, in Cordell et al. 1999 and from Tables 1-4 in NSRE 2000.

Table 3-56a: Numbers of people, 16 years and older, participating in selected outdoor recreation activities in 1983, 1995, and 2000, and percentage increase in participation from 1983 to 2000.

Recreation Activity	1983	1995	2000	1983 to 2000
	No. in Millions	No. in Millions	No. in Millions	Percent Change
Bird watching	21.2	54.1	71.2	236
Hiking	24.7	47.8	71.4	189
Backpacking	8.8	15.2	23.4	166
Primitive area camping	17.1	28.0	32.3	89
Off-road (4-wheel, ATV, motorbike)	19.4	27.9	36.7	89
Walking	93.6	133.7	179.1	91
Sightseeing	81.3	113.4	114.1	40
Developed area camping	30.0	41.5	52.9	76
Picnicking	84.8	98.3	116.6	38
Horseback riding	15.9	14.3	21.7	36
Hunting	21.2	18.6	24.0	13
Motorboating	33.6	47.0	51.4	53
Fishing	60.1	57.8	72.4	20
Downhill Skiing	10.6	16.8	17.6	66
Snowmobiling	5.3	7.1	11.0	108
Cross-country skiing	5.3	6.5	8.1	53

Adapted from Table V.10, in Cordell et al. 1999 and from Tables 1-4 in NSRE 2000.

All of the activities in Figure 3-56a and Table 3-56a show increases from 1983 to 2000. By far the most popular outdoor recreation activity in 2000 was walking, with almost 180 million people participating (84 percent of people 16 years and older). Picnicking and sightseeing are also very popular, with almost 117 million and 114 million participants (approximately 54 percent of the population). These activities require modest skills and are generally low cost, so they appeal to a broad range of people (Cordell et al. 1999). They can also be enjoyed in settings close to home, such as streets, city trails, and city parks. Activities with the lowest levels of participation are the winter sports, followed by horseback riding, backpacking, and hunting.

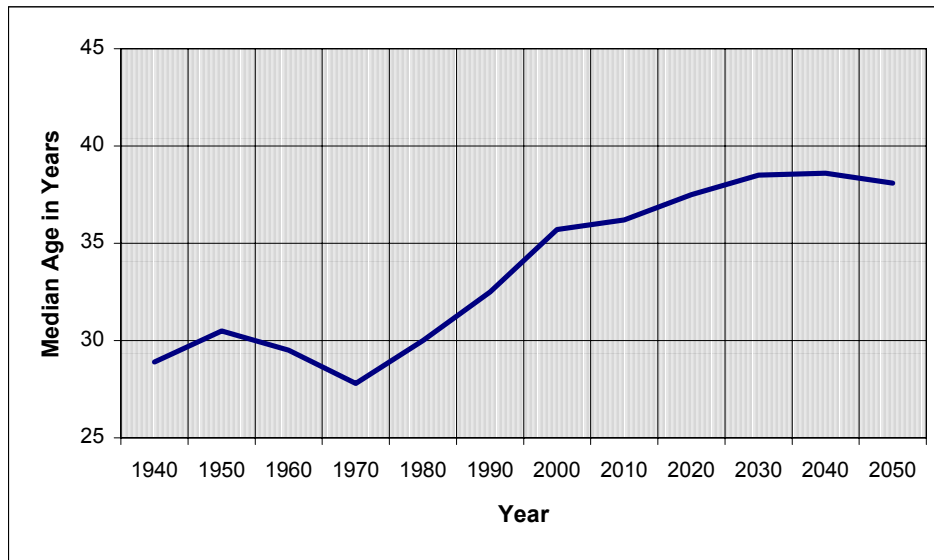
Some of the increase in recreation participation over time is due to the overall growth in the U.S. population, which was approximately 18 percent for the total population, based on data and on census projections (U.S. Department of Commerce, Bureau of the Census 1996). It should be noted that a high percentage increase does not necessarily mean a large number of people are participating in the activity, or vice versa. For example, the percentage increase in sightseeing from 1983 to 2000 was 40 percent, which represents an increase of 32.8 million participants. In contrast, the percentage increase in snowmobiling was 108 percent, which represents an additional 5.7 million adults participating. If the number of people participating was already high in 1983, even modest growth rates will result in large increases in total participants.

Aging Population

People's participation in recreation activities show some differences based on age. The often-discussed aging of the American population will likely affect future participation rates in different activities. Statistics from the Bureau of the

Census (U.S. Department of Commerce, Bureau of the Census 1996) show that the future population will be older in 2050 than it was in 1995. The increase in the median age of the population is driven by the aging of the Baby Boom generation, born between 1946 and 1964. In 2011, the first members of the Baby Boom will reach age 65. Figure 3-56b shows the change in median age from 1940 projected to 2050.

Figure 3-56b: Median age of U.S. population from 1940 to 2050.



Adapted from Figure 5, p. 8 in U.S. Department of Commerce, Bureau of the Census 1996.

Age-related preferences for participating in recreation activities were evaluated in the NSRE (Cordell et al. 1999). The data show that 70 to 89 percent of the participation in an activity is by “enthusiasts”, who are classified by the number of days they participate annually in an activity. Based on this classification, activities for which enthusiasts are most likely to be over the age of 50 are walking, bird watching, fish and wildlife viewing, sightseeing, and coldwater fishing. Future participation in recreation activities currently enjoyed by Americans in older age groups can be expected to increase as Baby Boomers enter those age groups. For example, Cordell notes: “With the number of people in their 70’s and older increasing rapidly in the United States, one can easily picture the popularity of outdoor walking continuing to increase” (Cordell et al. 1997).

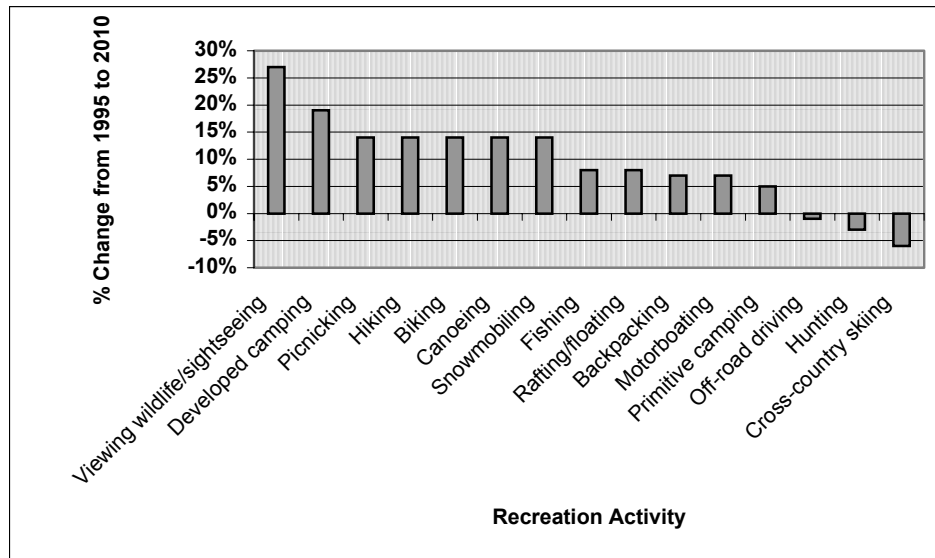
Projections of Future Participation

Bowker and others (1999) projected future outdoor recreation participation and consumption in ten-year increments out to 2050, using the data from the 1995 NSRE. One model estimates the probability that an individual will participate in a given recreation activity based on the individual’s characteristics (age, sex, income, etc.) and the recreation opportunities near the individual’s residence. A second model was used to estimate annual days an individual will spend in a

given outdoor recreation activities. To the extent that today's behavior is a good indicator of future behavior, these types of models can be used to estimate future recreation participation and consumption.

Estimated changes in future participation rates for the U.S. adult population are shown in Figure 3-56c.

Figure 3-56c: Percent change in U.S. adult participation in selected recreation activities, 1995 to 2010.



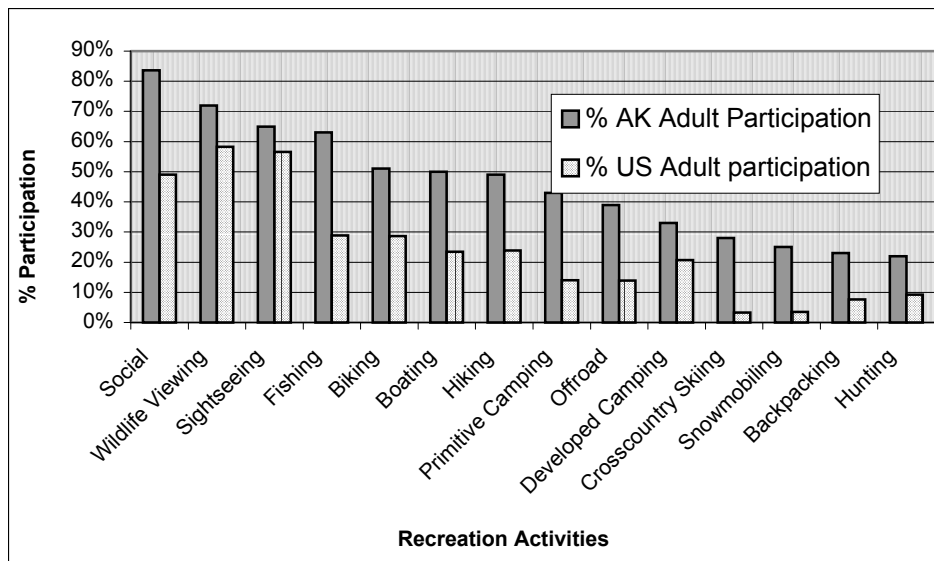
Adapted from Tables VI.3 through VI.24, Bowker (1999).

Three activities are projected to decrease in the percentage of the adult population participating by 2010: off-road driving, hunting, and cross-country skiing. All other activities are projected to show increases in percentage participation, with the largest increase in viewing wildlife and sightseeing.

Alaskan Recreation Use and Projections—Alaska Residents

Outdoor recreation is a way of life for Alaskans. The estimated proportion of Alaskan adults who participate in outdoor recreation activities is generally much higher than for the rest of the U.S. adult population (Bowker 2001). For many activities, rates of participation by Alaskans are at least three times the national average (Brooks and Haynes 2001). Figure 3-57a compares participation rates for Alaskan adults and the U.S. population as a whole in a variety of recreation activities.

Figure 3-57a: Participation rates by Alaskan adult population and U.S. adult population in outdoor recreation activities in 1995.



Sources: Bowker (2001); Bowker (1999).

Information about Alaskans participating in outdoor recreation is primarily available from two sources: state-by-state summaries of the 1995 NSRE (Cordell et al. 1997), and the 1997 State Comprehensive Outdoor Recreation Plan (SCORP) for Alaska. The SCORP survey indicates that residents place a high value on the availability and quality of outdoor recreation opportunities: 92 percent said parks and outdoor recreation were important or very important to their lifestyle (Alaska Department of Natural Resources, Division of Parks and Outdoor Recreation 1999).

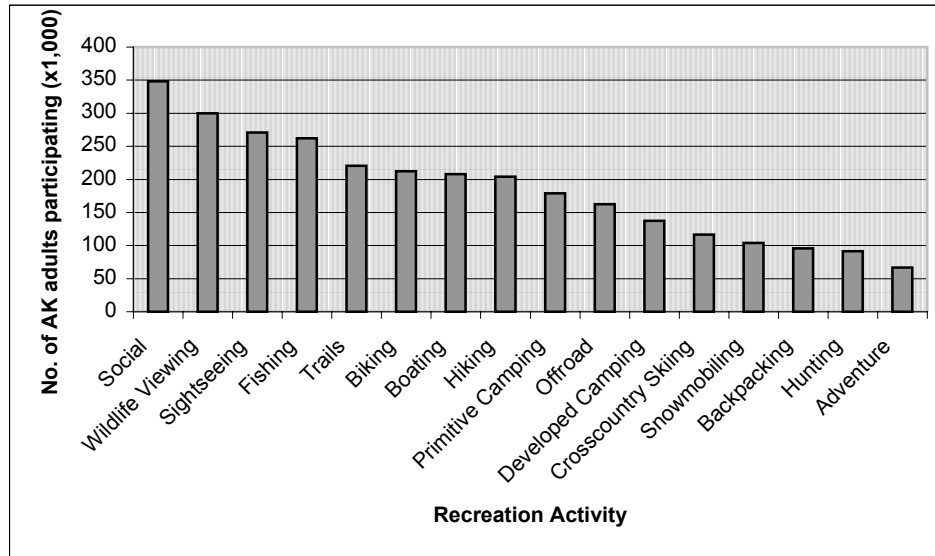
These two sources of data were used by Bowker (2001) to establish current patterns of Alaskan residents' recreation activities. The two data sets together provide information on the percentage of Alaskans that participate in specific activities; the number of times in a year they participate in a particular activity; and how often specific activities are the primary reason for a recreation trip.

Recreation Participation

Activity participation rates for Alaskan adults across the two data sets are reasonably consistent (Bowker 2001). According to Bowker's analysis, estimates derived from the 1997 SCORP data generally run higher than the 1995 NSRE estimates, for comparable activities. For the purposes of the following discussion of current and projected participation, only the 1995 NSRE estimates are displayed, which will facilitate comparison with national NSRE data presented previously. The SCORP data, however, will be used in projecting Alaskans' future recreation visits to the Chugach National Forest.

Figure 3-57b was developed using Bowker's estimates of the percentages of Alaskans participating in a variety of recreation activities, and the Bureau of the Census data on the number of Alaskan adults in 1995 (U.S. Department of Commerce, Bureau of the Census 1996).

Figure 3-57b: Number of Alaskan adults participating in outdoor recreation activities in 1995.



Adapted from Table 2b, Bowker (2001) and U.S. Department of Commerce, Bureau of the Census data (1996)..

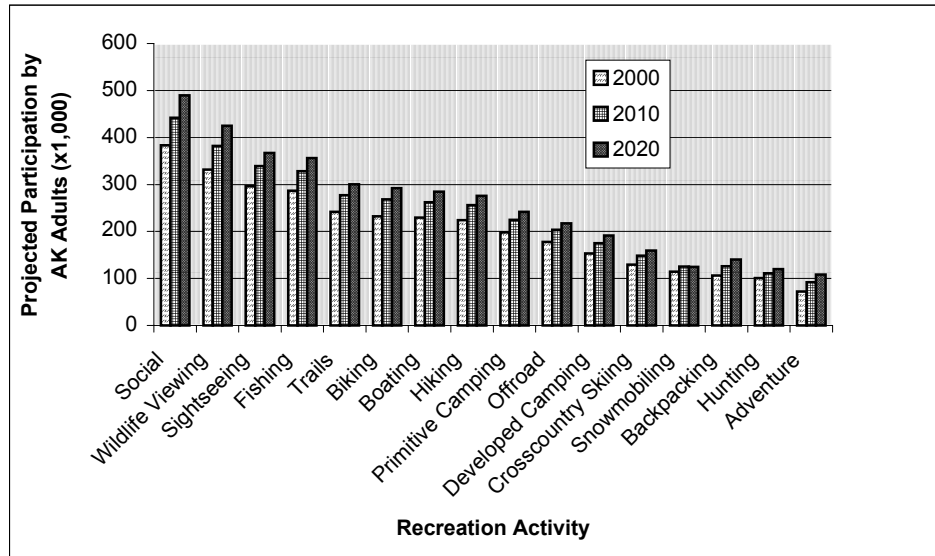
Four of these activities are enjoyed by two-thirds or more of the population: 84 percent participate in social activities (picnicking); 72 percent in wildlife viewing; 65 percent in sightseeing; and 63 percent in fishing. Generally, these types of recreation are day activities which can be done in a variety of settings, are often done along with other recreation activities, and generally are low cost and do not require high skill levels, other than fishing (Bowker 2001).

Projections of Future Participation

Estimates of future participation by Alaskan adults were developed by Bowker (2001) using the 1995 NSRE dataset and a population-based model. This type of model is based on the premise that a person's participation in outdoor recreation can be correlated with factors such as age, sex, income, and race. These types of models are typically used by recreation researchers to forecast participation and use levels by recreation activity. A limitation of this type of model is that it assumes that the factors that influence participation or use are constant into the future. It therefore cannot predict changes in participation or use due to new recreation technology, such as the growth in mountain biking and snowboarding. However, given the available data, this model is a reasonable way to estimate and forecast participation and use (Bowker 2001).

Projected participation of Alaskan adults in recreation activities out to 2020 are presented in Figure 3-57c and Table 3-56b.

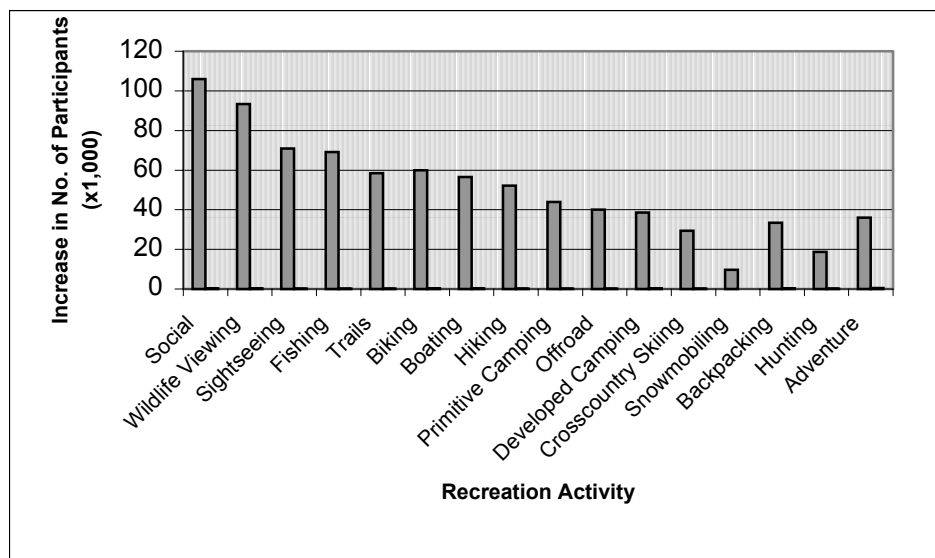
Figure 3-57c: Alaska statewide outdoor recreation participation estimates, 2000-2020, using the 1995 NSRE database (see also Table 3-56b).



Adapted from Table 2b, Bowker (2001).

The projected increases in actual numbers of people participating in specific activities from 2000 to 2020 are displayed in Figure 3-57d.

Figure 3-57d: Increase in number of adult Alaskans participating in recreation activities, from 2000 to 2020 (see also Table 3-56b).



Adapted from Table 2b, Bowker (2001).

Figure 3-57d indicates that the largest increase in numbers participating will be in social activities (picnicking) at 106,000. The smallest increase is predicted in snowmobiling with an additional 9,700 participants by 2020. Eight activities are predicted to have increases of 50,000 or more by 2020: social activities, wildlife viewing, sightseeing, fishing, trail activities, biking, boating, and hiking. Percentage increases are a function of both the actual numbers initially participating as well as the rate of increases.

The participation in recreation activities within a population is a result of overall population growth and per capita participation. In general, Bowker's model predicts that there will be little change over time in the per capita participation rate. However, the total number of people participating will change considerably due to the Alaska population growth, which is projected to be 28 percent from 2000 to 2020 (Bowker 2001). With the exception of snowmobiling, hunting, and adventure activities, most recreation activities are predicted to increase at about the same rate as overall population growth (Table 3-56b).

Table 3-56b. Alaska statewide outdoor recreation participation projections, 2000-2020, using the 1995 NSRE database.

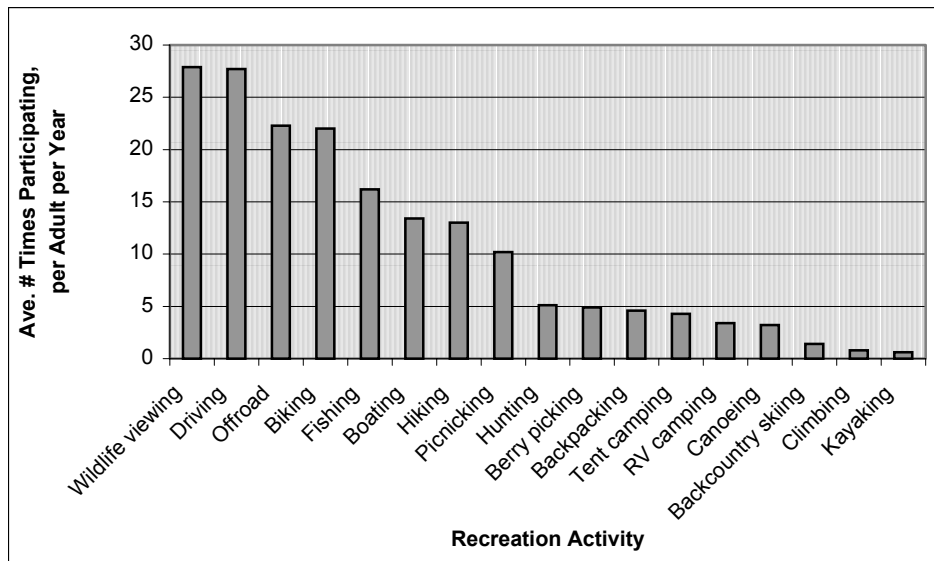
Recreation Activity	1995 Participation		Projected Participation, 2000 to 2020				
	Percent AK Adult Participation in 1995	Number of AK Adults Participating in 1995 (x1,000)	Projected Number of AK Adults Participating in 2000-2020 (x1,000)			Increase in Number of AK Adults Participating 2000-2020 (x1000)	Percent Increase in Participants 2000-2020
			2000	2010	2020		
Social	84	348	384	442	490	106	28
Wildlife Viewing	72	300	332	382	425	93	28
Sightseeing	65	271	296	339	367	71	24
Fishing	63	262	287	329	356	69	24
Trails	53	221	242	277	300	59	24
Biking	51	212	232	269	292	60	26
Boating	50	208	229	262	285	57	25
Hiking	49	204	224	256	276	52	23
Primitive Camping	43	179	198	225	242	44	22
Offroad	39	162	178	204	218	40	23
Developed Camping	33	137	153	175	192	39	25
Cross-country Skiing	28	117	130	148	159	29	23
Snowmobiling	25	104	115	125	124	10	8
Backpacking	23	96	107	126	140	34	31
Hunting	22	92	101	111	120	19	18
Adventure	16	67	72	92	108	36	50

Adapted from Table 2b, Bowker (2001).

Participation Times

The second aspect of use is the frequency of participation in recreation activities, referred to as “consumption” by Bowker. Using data from the 1997 SCORP, Figure 3-57e displays the average number of times an Alaskan participates in an activity in a year. This measure of frequency is also termed per capita rate.

Figure 3-57e: Average number of times an Alaskan adult annually participates in recreation activities (see also Table 3-56c).



Adapted from Table 3a, Bowker (2001).

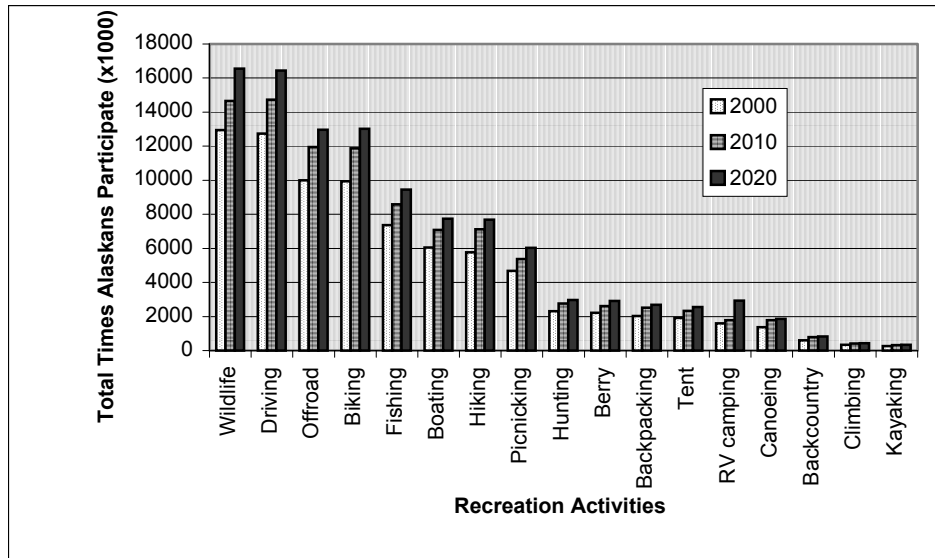
On an annual average, the five activities Alaskan adults participate in most often are wildlife viewing (28 times per year); driving for pleasure or scenic driving (almost 28 times annually), off-road vehicles including OHVs and snowmachines (about 22 times a year); biking including mountain biking (22 times per year); and fishing (16 times per year).

As with participation, these estimates indicate that Alaskan adults more frequently participate in activities that are relatively lower in cost and skill requirements than other activities in the survey, with the exception of fishing.

Projections of Participation Times

Bowker used data from the 1997 SCORP to model future trends in number of times Alaskan will participate in recreation activities. Figure 3-57f and Table 3-56c project total numbers for the entire Alaskan population.

Figure 3-57f: Projected increases in total times Alaskans participate in recreation activities, 2000 to 2020 (see also Table 3-56c).



Adapted from Table 3a, Bowker (2001).

Table 3-56c: Number of times adult Alaskans participate in recreation activities, per capita and projected total times for total population, 2000 to 2020.

Recreation Activity	Average Annual Times Participating per Adult	Projected Total Times of Population Participation (x1,000)			Projected Increase in Total Times	Projected Percent Increase in Total Times
		2000	2010	2020		
Wildlife viewing	27.9	12,950	14,658	16,544	3,594	28
Driving	27.7	12,739	14,726	16,434	3,695	29
Off Road	22.3	9,987	11,948	12,970	2,983	30
Biking	22.0	9,937	11,875	13,012	3,075	31
Fishing	16.2	7,366	8,590	9,456	2,089	28
Boating	13.4	6,047	7,090	7,742	1,695	28
Hiking	13.0	5,776	7,128	7,694	1,918	33
Picnicking	10.2	4,670	5,370	6,037	1,368	29
Hunting	5.1	2,315	2,755	2,970	655	28
Berry picking	4.9	2,219	2,609	2,904	685	31
Backpacking	4.6	2,033	2,515	2,684	650	32
Tent camping	4.3	1,918	2,338	2,547	629	33
RV camping	3.4	1,595	1,791	2,932	436	27
Canoeing	3.2	1,373	1,782	1,861	488	36
Backcountry skiing	1.4	606	793	829	223	37
Climbing	0.8	329	415	433	104	31
Kayaking	0.6	267	311	344	77	29

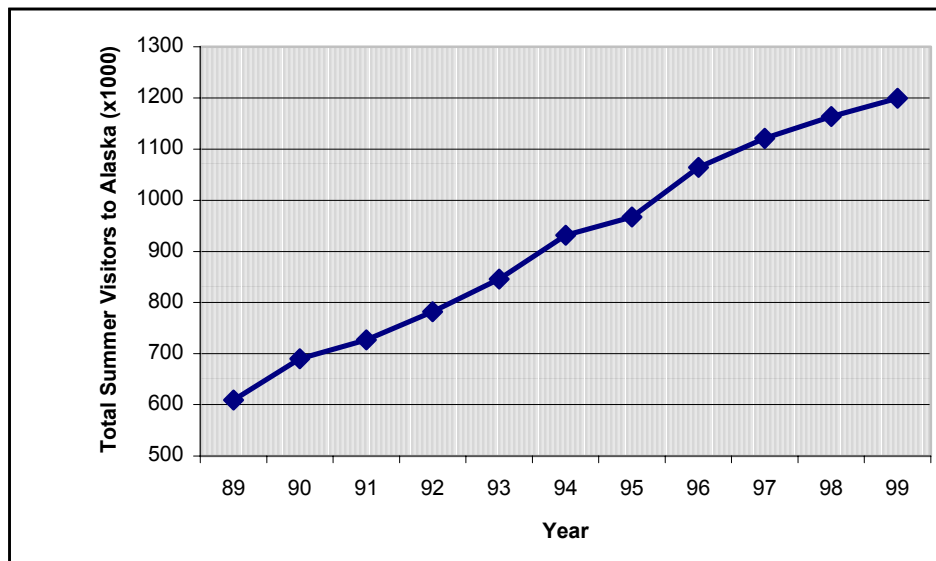
Adapted from Table 3a, Bowker (2001).

Alaskan Recreation Use and Projections—Alaska Visitors

The terms “tourist”, “visitor”, and “nonresident” in this analysis refer to people who visit Alaska for the purpose of recreation and leisure. Such visitors are estimated to spend at least \$1 billion a year (Brooks and Haynes 2001). Precise measures of tourism as an economic sector are difficult, due to limitations in how economic data are reported with respect to tourism related activity. Nevertheless, tourism is now reported to be the state’s second largest private sector employer, providing one of every eight private sector jobs (Alaska Department of Natural Resources, Division of Parks and Outdoor Recreation 1999).

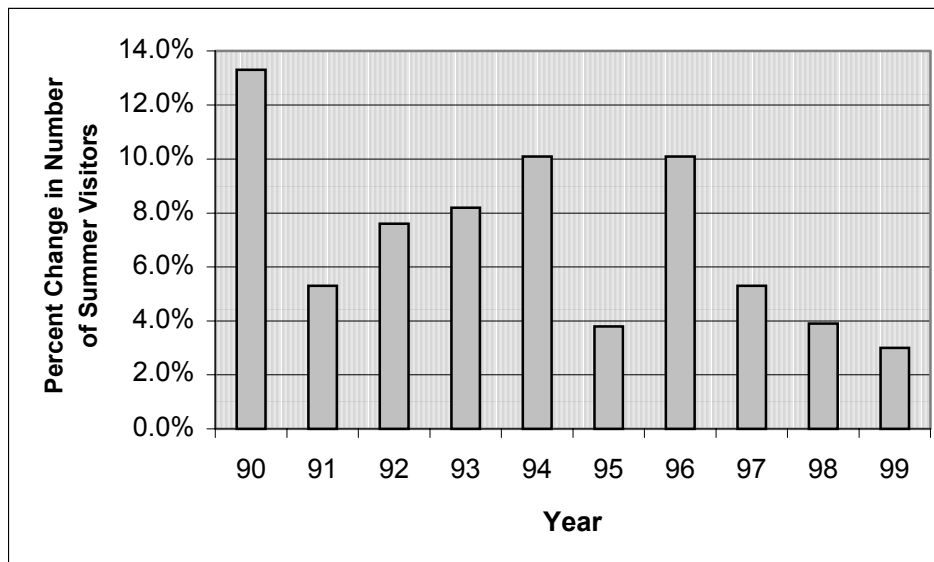
The number of summer visitors to Alaska has grown steadily over the last decade, as shown by arrival data from the Alaska Visitor Statistics Program (Figure 3-58a). Total numbers of visitors almost doubled from 1989 to 1999.

Figure 3-58a: Total visitors entering Alaska during May through September, 1989 to 1999.



From Alaska Visitor Statistics Program, McDowell Group 1999.

Overall, visitor volume grew moderately in the late 1980s, followed by a period of rapid growth in the early to mid-1990s. From 1997, the rate of growth has slowed and started decreasing, as shown in Figure 3-58b.

Figure 3-58b. Rate of growth in total summer visitors to Alaska, 1989 to 1999.

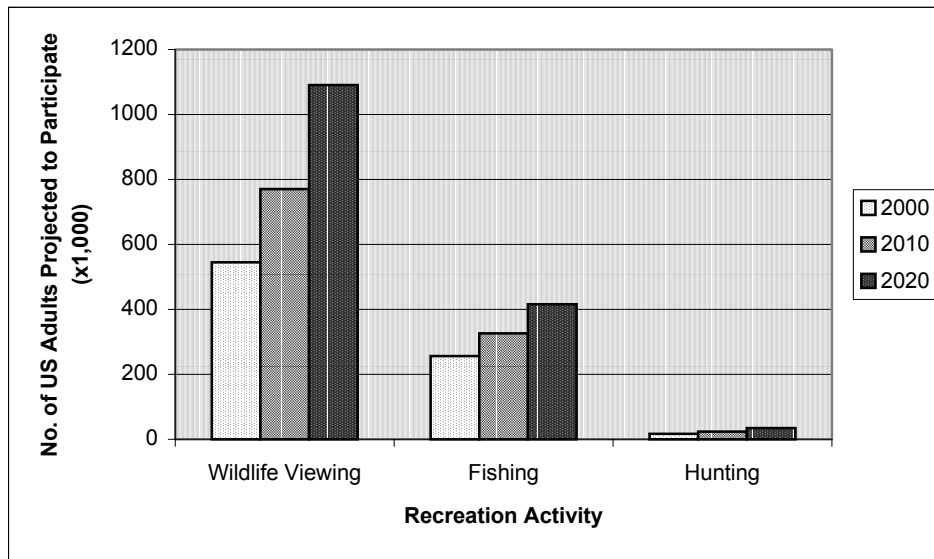
From Alaska Visitors Statistics Program, McDowell Group, 1999.

Brooks and Haynes (2001) conclude that the “growth in total numbers of participants in tourism in Alaska has slowed from the rate of growth observed in the early to mid-1990s.” Evidence includes summer arrival figures, bed tax receipts, harbor taxes, etc.

However, some categories of activities for the Chugach National Forest area are increasing rapidly. Colt and others (in press) report that activities such as whitewater rafting, guided kayaking, guided hiking, snowmachine tours, and helicopter skiing are increasing rapidly, based on business license data and their structured interviews with knowledgeable tourism operators in small, medium, and large businesses, and people in communities close to the Chugach National Forest. Between 1993 and 1998, the number of business licenses for enterprises associated with tourism and located near the Chugach National Forest, increased by nearly six percent per year, compared to no net increase for all of Southcentral Alaska and only 2.5 percent for all of Alaska (Brooks and Haynes 2001). During this same period (1988 to 1999) commercial recreation special use permits increased 184 percent or about 12 percent per year. One possible inference is that more of these new businesses are operating on the Forest.

Data on tourist participation in particular recreation activities is not available in the same amount of detail as for the U.S. population as a whole or for Alaskan residents. However, a 1996 survey by the U.S. Fish and Wildlife Service does provide information about tourist participation in wildlife-related recreation in Alaska. Bowker (2001) used data from this Fishing, Hunting, and Nonconsumptive Wildlife-Associated Recreation to project U.S. adult participation in these activities when visiting Alaska (Figure 3-58c).

Figure 3-58c: Projections of participation by U.S. adults (excluding Alaskans) in wildlife-related recreation activities in Alaska.



Adapted from Table 2d, Bowker (2001).

Figure 3-57c and Figure 3-58c reveal that for wildlife viewing, visitors to Alaska will outnumber Alaskans by almost three to one by 2020 (1.1 million visitors participating in wildlife viewing vs. 425,000 Alaskans viewing wildlife in 2020). The growth rate for wildlife viewing by visitors is a 100 percent increase, while the growth rate for Alaskans is a 28 percent increase. The growth rate for nonresident anglers will also exceed the growth rate for Alaskans by about 50 percent. One factor that is not accounted for in these modeled projections is the effect of supply on growth. If the supply of facilities or sites does not change from 2000 to 2020, the stable capacity and/or people's sense of crowding may result in a decrease in the projected growth rate (Bowker 2001).

Chugach National Forest Use and Projections

The limitations of Forest Service data regarding recreation and tourism use on the Chugach National Forest are well described by Colt and others (in press). These limitations include quantitative data for a relatively small number of the many recreation activities people participate in on the Forest; non-systematic biases in observations; and major changes in methodologies and activity definitions between 1995 and 1997, resulting in an inability to develop trend information across that time period for activities other than developed camping and cabin use.

Even with the many limitations of available data, there is ample evidence that the Chugach National Forest is heavily used as a scenic resource by motorists and waterborne passengers and, increasingly, as a place for road-accessible fishing, camping and motor-assisted recreation (Brooks and Haynes 2001). In the following sections, we will review and highlight the data and information that

provide an overview of current patterns of recreation and tourism on the Chugach National Forest, and that provide the basis for assumptions used in making projections of future demand.

Demographics of Chugach National Forest Recreationists

The Recreation Survey '95 on the Chugach National Forest included questions related to age, sex, and residence (Reed 1995). Across all activities surveyed, 55 percent of participants were male. Men are especially predominant in hunting (88 percent). The activity with the highest participation by women was viewing interpretive sites and information services at 57 percent.

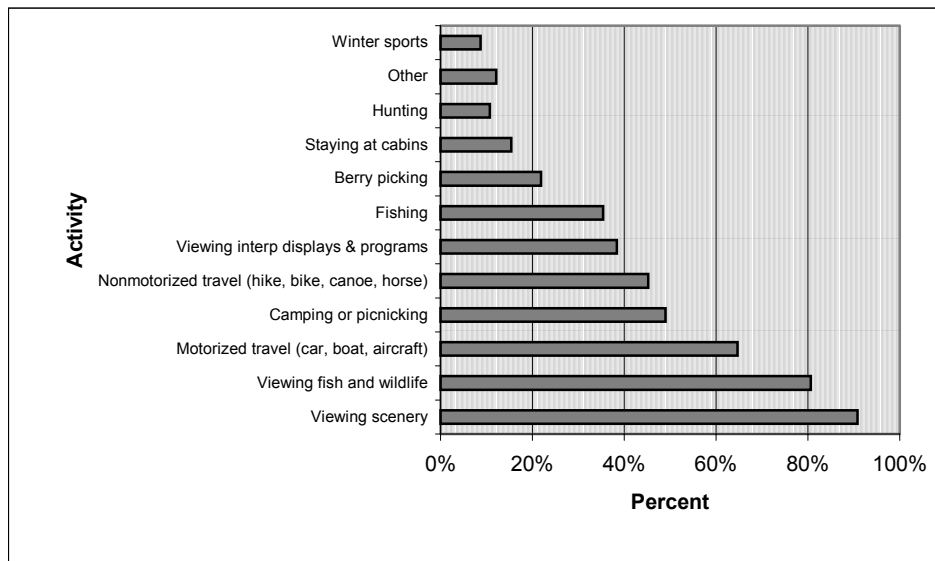
Forty-six percent of the respondents were aged 21 to 45, and thirty-four percent were aged 46 to 65. For most recreation activities, participation rates were approximately equal for those 45 years and younger and those over 45 years of age. However, a few activities showed distinctly different rates of participation based on age. The most striking difference is in nonmotorized travel such as hiking, biking, and canoeing, where 74 percent of people 45 years and younger participated, and 22 percent of people over 45 years of age participated. A larger percentage of people in the younger age class than the older class reported using cabins: 60 percent vs. 36 percent. There was a slightly larger percentage of people in the older age class who participated in motorized travel such as driving for pleasure and boating: 52 percent vs. 42 percent of people 45 years and younger. These findings are similar to conclusions from the 1995 NSRE that older age groups participate at a higher rate in less physically demanding activities (Cordell et al. 1999).

The Recreation Survey '95 also provides information about the places of origin for recreationists on the Chugach National Forest. The Chugach National Forest is the "backyard" recreation area for the Municipality of Anchorage, where 42 percent of all Alaskans live (Alaska Department of Natural Resources, Division of Parks and Outdoor Recreation 1999). Data from the Survey showed that 23 percent of Forest visitors came from Anchorage with another 16 percent from the rest of Alaska (Reed 1995). Approximately two-thirds of visitors to the Chugach National Forest came from outside of Alaska, with six percent of those visitors being from foreign countries.

Participation

The Recreation Survey '95 provides a snapshot of participation rates among people who were actually visiting the Chugach National Forest in the summer of 1995. Because the survey was conducted only in the summer, participation in winter sports and hunting are underrepresented. In addition, the survey may over represent people recreating at developed sites because people are easier to survey in areas of concentrated use. Figure 3-59a displays the participation rates from the survey.

Figure 3-59a: Percentage participation in recreation activities on the Chugach National Forest, based on Recreation Survey '95.



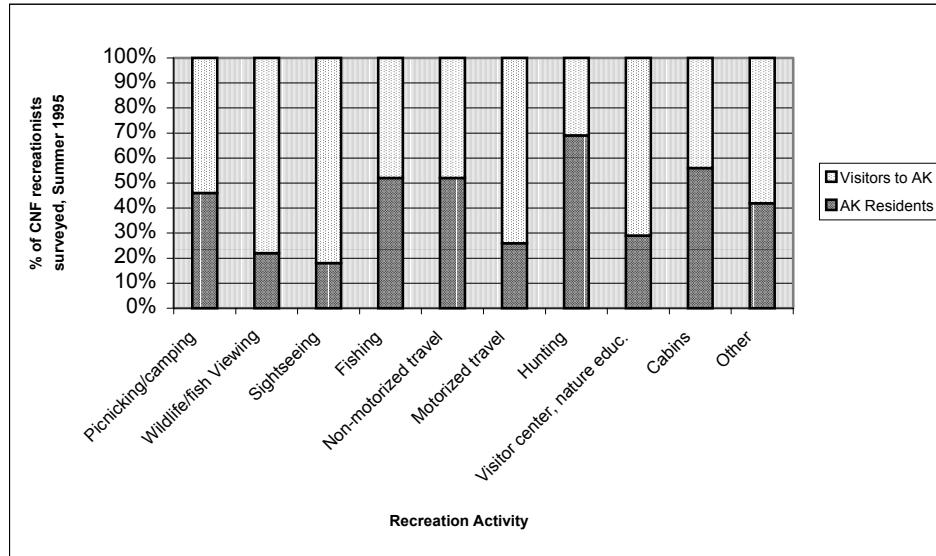
Adapted from Table 77, Reed (1995).

The three activities most commonly engaged in by recreationists on the Chugach National Forest are viewing scenery, viewing fish and wildlife, and motorized travel (vehicles, boats, aircraft). Taking into account that the Recreation Survey '95 on the Chugach National Forest and the NSRE categorize activities somewhat differently, Figure 3-59a, along with Figures 3-56a and 3-57b, are fairly consistent in showing that nationally, statewide, and on the Chugach National Forest, the most popular activities are viewing scenery or sightseeing, viewing fish and wildlife, and social activities such as picnicking or camping.



The proportion of visitors and residents participating in different recreation activities varied, as shown in Figure 3-59b.

Figure 3-59b: Participation rates of visitors and residents in recreation activities on the Chugach National Forest, summer 1995.



Adapted from Tables 3, 20, 37, 54, 71, Recreation Survey 1995 (Reed, 1995).

Participation in picnicking/camping, fishing, and nonmotorized travel was about evenly split between residents and visitors. Visitors engaged in wildlife/fish viewing, sightseeing, motorized travel, and going to visitor centers at far higher rates than did residents.

For Alaskans recreating on the Chugach National Forest, Anchorage residents constitute a somewhat higher percentage than Alaskans from other parts of the state (23 percent vs. 16 percent). Data from the SCORP survey shows that Anchorage residents demonstrate different recreation preferences or behavior from the rest of Alaskans (Bowker 2001). A greater proportion of Anchorage residents participate in or more frequently participate in the following activities, compared to other Alaskan residents:

Anchorage Participation Rate is Higher	Anchorage Frequency is Higher
<ul style="list-style-type: none"> • Biking • Canoeing • Climbing • Scenic driving • RV camping • Tent camping 	<ul style="list-style-type: none"> • RV camping • Tent camping

For other activities, the participation rate and frequency are significantly lower for Anchorage residents compared to other Alaskans:

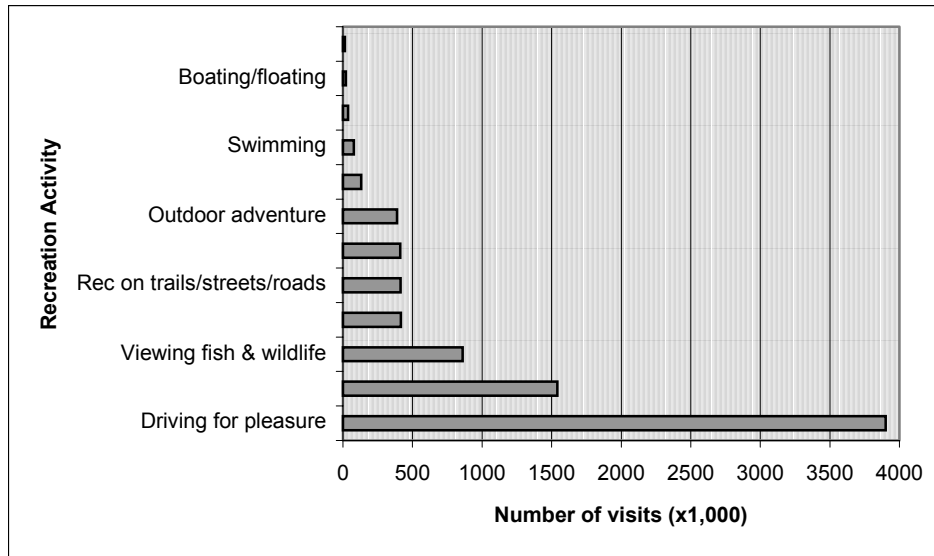
Anchorage Participation Rate is Lower	Anchorage Frequency is Lower
<ul style="list-style-type: none"> • Berry picking • Boating • Hunting • Kayaking • Picnicking 	<ul style="list-style-type: none"> • Berry picking • Wildlife viewing • Boating • Off-road • ORV driving

Other activities showed no statistical differences between Anchorage residents and their fellow Alaskan:

Anchorage Participation Rate is Similar	Anchorage Frequency is Similar
<ul style="list-style-type: none"> • Backpacking • Backcountry skiing • Wildlife viewing • Fishing • Hiking • Off-road • ORV use 	<ul style="list-style-type: none"> • Backpacking • Backcountry skiing • Biking • Canoeing • Climbing • Fishing • Hiking • Hunting • Kayaking • Picnicking • Scenic driving

Another snapshot of people's participation in different recreation activities on the Chugach National Forest is INFRA data from 1998, shown in Figure 3-59c. The Forest Service's INFRA data has been aggregated into categories similar to those used in the NSRE for ease of comparison. Whereas the NSRE data shows the number of people who participate in an activity, the INFRA data shows the number of visits made annually to the Chugach National Forest to participate in a particular activity. It also measures people of all ages, not just adults.

Figure 3-59c: Total visits to the Chugach National Forest to participate in recreation activities, based on 1998 INFRA data.



Adapted from USDA Forest Service 1998 INFRA database (USDA Forest Service 1998c).

Sightseeing/Driving for Pleasure generates by far the most use on the Chugach National Forest. A distant second is visiting the Forest's two major visitor centers in Portage Valley and Valdez, followed by viewing fish and wildlife. Viewing and learning ranks high, primarily due to the Begich, Boggs Visitor Center being a major attraction in the state. In 1993, it was the most visited site among major Alaskan attractions, according to the Alaska Visitor Statistics Program. The overwhelming predominance of sightseeing and driving for pleasure is a result of several factors. First, as noted earlier, out-of-state visitors comprise two-thirds of Forest visitors. The Recreation Survey '95 data indicate that they cite viewing scenery and motorized travel most often as their primary reason for visiting the Forest. Secondly, Anchorage residents comprise 23 percent of visitors to the Forest, and they participate in scenic driving at a significantly higher rate than other Alaskans (Bowker 2001).

Commercial Use

Colt and others (in press), analyzing Forest Service special use permit data, conclude that there has been an increase, perhaps substantial, in the role of businesses in supporting and promoting recreation use of the Chugach National Forest. The number of clients in all activities provided for by special use permittees roughly doubled from 1994 to 1998. Numbers of guided clients in a few activities, including primitive camping, kayaking, and hiking, grew far faster than the average.

There is also some evidence that tourist use of the Forest may be increasing faster than resident use, as indicated by the steady growth in the sale of nonresident fishing licenses in contrast with constant or declining numbers of resident licenses. This trend is consistent with the observations expressed in some of the key tourism industry interviews, that increasing numbers of nonresidents are “discovering” the Chugach National Forest (Colt et al. in press).

Summary of Recreation Patterns

As the preceding discussions illustrate, understanding the recreation patterns of people is complex. Participation in recreation can be measured in a variety of ways. Different populations recreate in different ways and at different rates. Projecting future recreation behavior assumes that people’s recreation preferences and level of activity will be much like their past behavior. So as a population increases and its demographics change, recreation patterns also change.

As difficult as it may be to measure and project the recreation behavior of a population, there is even less quantitative information available about people’s preferences for recreating in a specific area such as the three geographic areas of the Chugach National Forest.

The following points summarize what is known about recreation behavior at the national and state levels, and on the Chugach National Forest:

- Nationally, statewide, and on the Chugach National Forest, the most popular activities are viewing scenery or sightseeing, viewing fish and wildlife, and social activities such as picnicking or camping. These activities require modest skills and are generally low cost, compared to some of the less popular activities.
- Nationally, we can expect increasing use levels in almost every form of recreation.
- The estimated proportion of Alaskan adults participating in various outdoor recreation activities is generally much higher than for the rest of the U.S. population.
- With a few exceptions, most recreation activities are predicted to increase at about the same rate as overall population growth in Alaska.
- Participation in certain activities may increase at higher rates, due to both increase in the number of Americans in older age groups and the greater participation of those age groups in certain activities. Activities for which enthusiasts are most likely to be over the age of 50 are walking, bird watching, fish and wildlife viewing, sightseeing, and coldwater fishing.

- Visitors to Alaska will outnumber Alaskans in wildlife viewing by almost three to one by 2020. The growth rate for nonresident anglers will also exceed the growth rate for Alaskans by about fifty percent.
- There is ample evidence to suggest that the Chugach National Forest is heavily used as a scenic resource by motorists and waterborne passengers and, increasingly, as a place for road-accessible fishing, camping and motor-assisted recreation.
- Sightseeing generates by far the most of the use on the Chugach National Forest. A distant second is visiting the Forest's two major visitor centers in Portage Valley and Valdez, followed by viewing fish and wildlife.
- Indirect evidence indicates that activities such as whitewater rafting, guided kayaking, guided hiking, snowmachine tours, and helicopter skiing are increasing rapidly on the Chugach National Forest.
- Older age groups participate at a higher rate in less physically demanding activities on the Chugach National Forest, as shown by a higher proportion of people over the age of 45 participating in sightseeing and lower proportion participating in activities such as hiking, biking, and canoeing.
- On the Chugach National Forest, nonresidents engaged in wildlife/fish viewing, sightseeing and going to visitor centers at far higher rates than residents.

Projections of Visits for Chugach National Forest

For the purposes of this environmental analysis, the key question is how well each alternative meets future demand for recreation opportunities on the Chugach National Forest. In the first part of this Affected Environment discussion, the current supply of recreation opportunities on the Chugach National Forest was described in terms of the capacity of developed facilities and the capacity of inventoried settings for dispersed recreation activities. Current use levels were measured by the number of visits occurring at developed facilities and in dispersed settings. In order to evaluate the alternatives' response to future demand, the future number of visits to recreation facilities and settings on the Chugach National Forest must be estimated.

The methodology used to make estimates of future visits to the Chugach National Forest is based on Bowker's (2001) projections of percentage changes in participation times for different recreation activities. Both visits and participation times are measures of frequency. Visits, however, are a measure of use at a location while participation times are not tied to any location. Estimates are made for both Alaskan residents and for visitors to Alaska. The major assumptions used are listed below, with the detailed methodology and assumptions available in the administrative record.

Assumptions:

- Assume visits to Chugach National Forest (1998 INFRA data) will change at the same rate as participation times projected by Bowker and that the projections are uniform across all three geographic areas.
- For Alaska residents, use projections based on the 1997 SCORP data set (Bowker 2001).
- For Alaska visitors, use projections for wildlife/fish related recreation based on the 1996 FHWAR data set (Bowker 2001). For all other activities, use projections based on national the 1995 NSRE data set (Bowker et al. 1999).
- Use data from the Recreation Survey '95 (Reed 1995) to estimate the proportion of resident and nonresident use on Chugach National Forest.

Projections of visits by activity in 2010 were calculated using the following formula:

$$\text{Visits}_{2010 \text{ Activity X}} = (\text{Visits}_{1998 \text{ Activity X}}) \times (P_{2010 \text{ Activity X}}) \times (R \text{ or } N)$$

where

$\text{Visits}_{2010 \text{ Activity X}}$ is the number of visits to the Chugach National Forest in recreation activity X projected for 2010;

$\text{Visits}_{1998 \text{ Activity X}}$ is the number of visits to the Chugach National Forest in recreation activity X, from INFRA 1998 (cabin and campground visits are based on 2000 use data);

$P_{2010 \text{ Activity X}}$ is Bowker's projection for percent change in number of times participating for each activity and for residents and nonresidents; and,

R or N is the proportion of Chugach National Forest visitors that are residents or nonresidents.

The results of these calculations are displayed in the last three columns of Table 3-56d.

Table 3-56d: Existing and projected recreation visits to the Chugach National Forest in 2010, by recreation activity.

Recreation Activity	Existing Visits			Projected Visits 2010		
	Developed Sites	Dispersed Areas	Forest Total	Developed Sites	Dispersed Areas	Forest Total
Picnicking	7,152	92,428	99,580	8,186	105,793	113,979
Wildlife/fish Viewing	239,551	566,251	805,801	323,010	763,533	1,086,543
Sightseeing	398,058	3,324,361	3,722,420	497,653	4,156,117	4,653,769
Fishing	25,068	387,058	412,125	30,532	471,436	501,969
Biking	2,317	9,746	12,062	2,713	11,414	14,128
Motorboating	1,242	8,451	9,693	1,361	9,262	10,623
Hiking	37,120	365,126	402,247	44,054	433,332	477,386
Primitive camping	0	167,765	167,765	0	197,963	197,963
ORV, ATV, 4WD	69	38,875	38,944	72	40,508	40,580
Developed camping	163,217	0	163,217	200,985	0	200,985
Cross-country skiing	137,885	54,591	192,477	170,426	67,475	237,901
Snowmachining	121,538	43,045	164,583	144,388	51,137	195,525
Backpacking	0	44,379	44,379	0	51,621	51,621
Hunting	5,467	30,192	35,660	6,879	37,988	44,867
Climbing	0	1,362	1,362	0	1,592	1,592
Berry picking	2,839	45,996	48,835	3,350	54,276	57,626
Canoe/raft/floating	993	9,638	10,631	1,200	11,651	12,851
Visitor Center, nature education	1,512,922	26,262	1,539,184	1,921,411	33,353	1,954,763
Cabins	7,055	0	7,055	7,931	0	7,931
Other	166,306	94,156	260,462	186,117	105,371	291,488
Total	2,828,799	5,309,683	8,138,482	3,550,269	6,603,822	10,154,090

The largest area of uncertainty in this methodology is the lack of comprehensive data regarding visitors' participation in recreation activities while traveling in Alaska, other than for wildlife/fish related activities. People's participation in activities near their residence probably differs from their participation in activities while visiting Alaska. Because people come to Alaska to specifically participate in particular recreation activities, the national data probably underestimates visitors' participation rates in these activities.

Environmental Consequences

The analysis of environmental effects compares the differences in alternatives responding to three primary questions:

1. What are the differences between the current, inventoried ROS Classes and the proposed ROS Classes in each alternative and the differences between alternatives (recreation settings);
2. How will the alternatives respond to anticipated increases in recreation and tourism use for both developed and dispersed recreation opportunities (infrastructure and capacity); and,
3. How will the alternatives improve significant situations related to recreation and user conflicts, primarily winter motorized and nonmotorized recreation opportunities?

These three questions and the factors they address summarize the key indicators that affected development of each alternative. Each alternative emphasizes a different mix of recreation settings, infrastructure and capacity, and reduction of user conflicts consistent with the theme of the alternative. Across the range of alternatives, all the different interests of the Recreation/Tourism Situation are addressed.

Summary of Consequences by Alternative

This section provides a brief description of how each alternative addresses the Recreation/Tourism Situation. An in-depth analysis and comparison of the consequences and effects by geographic area begins after the Summary section.

The Roaded Natural and Roaded Modified ROS classes do not necessarily have roads. Additionally, these ROS classes do not authorize road development. Only management prescriptions can allow road development. Road construction is also limited by the Forest Service's Roadless Area Conservation Rule (see Roadless Areas section). Roads may be an element of the recreation setting in these classes, but the Roaded ROS class also refers to a higher degree of recreation development and comfort such as wide, easy trails; larger numbers of people; facilities for convenience; or, little opportunity for solitude or quiet (Table 3-54).

No Action Alternative

The No Action Alternative allows for opportunities to increase use and development in the Kenai Peninsula and Copper River Delta geographic areas. Prince William Sound emphasizes a wild character and limited development. Recreation settings are primarily Semi-primitive Motorized and Roaded Natural except in Prince William Sound where Semi-primitive Motorized and Primitive II dominate. Few areas are identified to separate motorized and nonmotorized winter or summer recreation activities beyond those currently identified.

Preferred Alternative

The Preferred Alternative allows for opportunities to increase use and development concentrated along existing road corridors (3/4 mile on either side of roads). Prince William Sound and the Copper River Delta geographic areas emphasize dispersed recreation use and limited development. Recreation settings are primarily Primitive, Semi-primitive Nonmotorized and Semi-primitive Motorized away from these corridors. Many areas across the Forest are proposed to be managed to separate motorized and nonmotorized winter and summer recreation activities to reduce user conflicts.

Alternative A

Alternative A allows for opportunities to increase use and development in all geographic areas of the Forest. Recreation settings are primarily Semi-primitive Motorized to Roaded Natural. All geographic areas emphasize motorized recreation activities winter and summer. No areas are designated for nonmotorized settings.

Alternative B

Alternative B allows for opportunities to increase use and development in the Kenai Peninsula and Copper River Delta geographic areas of the Forest. In Prince William Sound, dispersed recreation and limited development are emphasized, except adjacent to Whittier where higher use and development levels are allowed. Recreation settings are primarily Semi-primitive Motorized to Roaded Natural. A few selected areas on the Kenai Peninsula are proposed to be managed to separate motorized and nonmotorized winter and summer recreation activities.

Alternative C

Alternative C allows for opportunities to increase use and development concentrated along existing road corridors (1/2 mile on either side of roads). In Prince William Sound and the Copper River Delta geographic areas, dispersed recreation use and limited development are emphasized. Recreation settings are primarily Semi-primitive Motorized, Semi-primitive Nonmotorized, Roaded Natural, and Roaded Modified. Several selected areas on the Kenai Peninsula are proposed to be managed to separate motorized and nonmotorized winter and summer recreation activities.

Alternative D

Alternative D allows for opportunities to increase use and development concentrated along existing road corridors (1/4 mile on either side of roads). In Prince William Sound, the Copper River Delta, and areas outside the roaded corridors on the Kenai Peninsula geographic areas, dispersed recreation use and limited development are emphasized. Recreation settings are primarily Semi-primitive Motorized and Nonmotorized and Roaded Natural and Modified. Several selected areas on the Kenai Peninsula are proposed to be managed to separate motorized and nonmotorized winter and summer recreation activities.

Alternative E

Alternative E allows for opportunities to increase use and development concentrated along existing road corridors (1/4 mile on either side of road). In Prince William Sound, the Copper River Delta, and areas outside the roaded corridors on the Kenai Peninsula geographic areas, dispersed recreation use and limited development are emphasized. Recreation settings are primarily Primitive to Semi-primitive Motorized. Much of the Kenai Peninsula geographic area emphasizes nonmotorized recreation activities winter and summer. Prince William Sound and the Copper River Delta have selected areas separating motorized and nonmotorized winter and summer recreation activities.

Alternative F

Alternative F allows for opportunities to increase use and development concentrated along existing road corridors (1/4 mile on either side of road). In Prince William Sound, the Copper River Delta, and areas outside the roaded corridors on the Kenai Peninsula geographic areas, dispersed recreation use and limited development are emphasized. Recreation settings are primarily Primitive to Semi-primitive Nonmotorized. All geographic areas emphasize nonmotorized

recreation activities winter and summer, so no areas are designated for motorized settings.

Environmental Consequences by Geographic Area

Allocation of prescriptions and management intent varies for each geographic area by alternative. In-depth analysis of the environmental consequences of the alternatives are discussed and displayed by the three major geographic areas of the Chugach National Forest: Kenai Peninsula, Prince William Sound and Copper River Delta. This analysis will address the three major topics identified as key indicators:

1. Recreation Settings, discussed in two parts:
 - The difference between the existing ROS classes and the ROS classes proposed in each alternative will be described. Any difference indicates how much the recreation settings may migrate from current settings over the life of the plan.
 - The alternatives will be compared to each other as to the relative differences in recreation settings and opportunities. Tables and figures will be included to display the specific acres in each class.
2. Recreation Infrastructure and Capacity, discussed in two parts:
 - The existing developed recreation infrastructure and capacity and the alternatives' proposed developed infrastructure and capacity will be compared and discussed.
 - The existing dispersed recreation capacity and the alternatives' proposed dispersed capacity will be compared and discussed.
3. Recreation conflicts and situations are discussed relative to the conflict or situations of each geographic area, comparing the alternatives on how specific conflicts or situations were addressed in the alternatives.

The recreation settings are discussed and displayed without reference to their motorized component. The ROS classes are grouped into Primitive, Semi-primitive, and Roaded. Interests related to access and motorized use or activities will be discussed in the third section of each geographic area (user conflicts) and the section on Access Management.

For all alternatives and geographic areas the Rural ROS class is used only on mineral claims and will remain constant. This ROS is proposed for mineral claims assuming that there will be a certain level of disturbance and the recreation setting will be altered. It will not be discussed or analyzed further.

Kenai Peninsula Geographic Area

On the Kenai Peninsula, there is an existing infrastructure and access network. The alternatives for Kenai Peninsula provide Primitive and Semi-primitive recreation settings accessible from the road corridor, allow development of

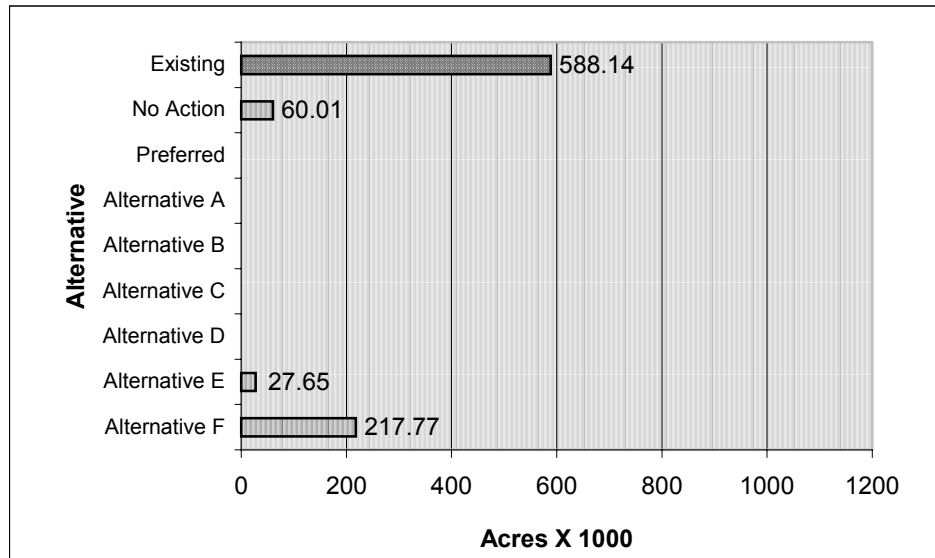
infrastructure to meet anticipated demand for more recreation infrastructure and capacity, and address conflicts between winter and summer motorized and nonmotorized interests.

Recreation Settings

All the alternatives emphasize intense recreation management along the Seward Highway All-American Road corridor. The ROS class is Roaded Natural except in those areas where forest restoration is emphasized and the ROS class is Roaded Modified. While all alternatives propose to manage the road corridor similarly, there is a difference in the width of the road corridor. Alternative A has a 1-mile corridor on either side of the road. The Preferred Alternative has a $\frac{3}{4}$ mile corridor on either side. Alternatives B, C and the No Action Alternative have a $\frac{1}{2}$ mile corridor on either side and Alternatives D, E, and F have a $\frac{1}{4}$ mile corridor. In all alternatives, this would allow for development of a variety of recreation facilities and infrastructure to accommodate anticipated increases in use. Within the road corridor, Forest visitors should not expect to find much quiet or solitude. Access would be relatively easy and never too far away. The only difference in the corridor width is in the land area available, along the road corridor, where more intense management can occur. The greatest variance between the existing ROS settings and the proposed ROS settings in the alternatives is the allocation of recreation settings away from the Seward Highway All-American Road corridor.

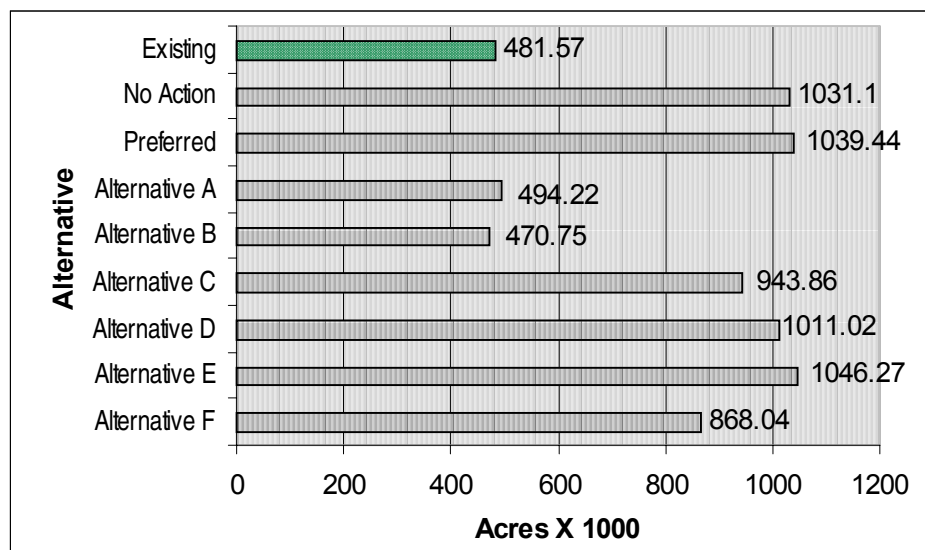
In all alternatives, the Primitive ROS class would not be emphasized (Figure 3-60a). The existing opportunities for primitive recreation opportunities would not be managed for in Alternatives A, B, C, D, and the Preferred Alternative. Alternative E has a small primitive area at the head of the Snow River; the No Action Alternative has a slightly larger area also in the Snow River drainage; and Alternative F maintains most of the Snow River, South Fork Snow River, Lost Lake and Russian River drainage for primitive recreation opportunities.

Figure 3-60a: Primitive ROS by alternative - Kenai Peninsula.



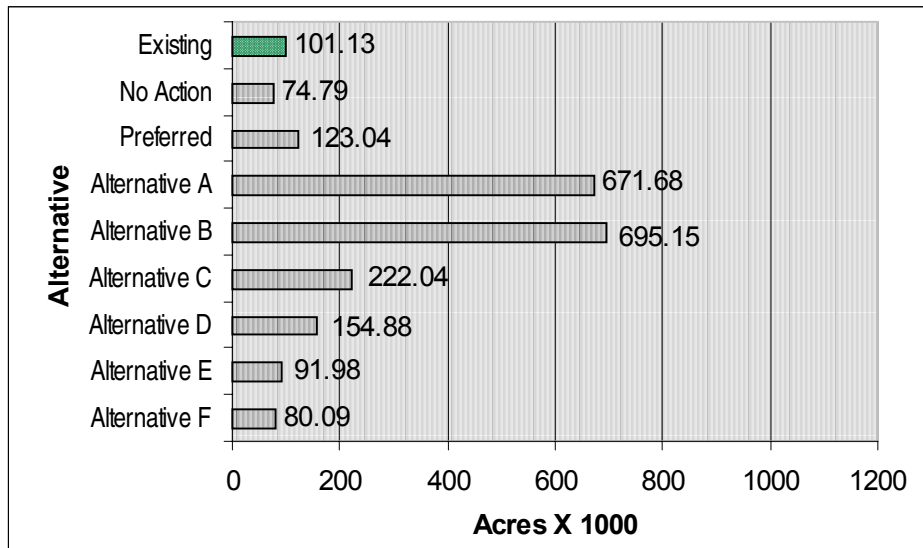
For the Kenai Peninsula geographic area, Semi-primitive recreation settings are the primary management emphasis in all alternatives except Alternatives A and B (Figure 3-60b). Alternatives A and B maintain approximately the same amount of Semi-primitive recreation opportunities as currently existing. Most of the areas proposed for Semi-primitive management are currently inventoried as Primitive. Managing for a Semi-primitive recreation setting would allow the Forest to maintain the wild and natural character of most of the Kenai Peninsula while also improving access (primarily trails) and developing additional recreation sites (cabins, viewing areas, etc.).

Figure 3-60b: Semi-primitive ROS by alternative - Kenai Peninsula.



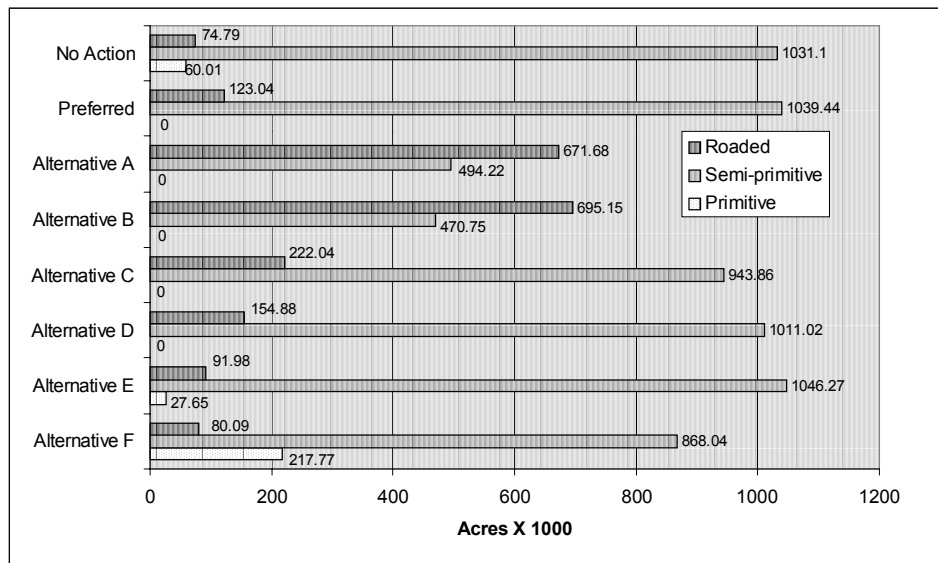
Only Alternatives A and B propose any significant change from the existing Roaded ROS classes (Figure 3-60c). Both Alternatives A and B propose that large areas of the Kenai Peninsula be managed for Roaded ROS opportunities. Most of the areas proposed for Roaded ROS management are currently inventoried Primitive and Semi-primitive. Managing for a Roaded recreation setting would allow the Forest to significantly increase the density of recreation use and activities, develop a variety of facilities, and improve access.

Figure 3-60c: Roaded ROS by alternative - Kenai Peninsula.



In comparing the alternatives, there is not a significant variation in the proposed recreation settings, except for Alternatives A and B (Figure 3-60d). All but Alternatives A and B emphasize Semi-primitive recreation settings for most of the Kenai Peninsula, with Roaded settings concentrated along the road corridors. This would result in a concentration of recreation use, facilities and activities along the road corridors while maintaining a more natural setting away from the road corridors. Opportunities to experience Alaska from easier, road accessible sites would be available as well as opportunities for those interested in getting away from more crowded and developed areas. Alternatives A and B emphasize more Roaded recreation settings, allowing for higher recreation use and development over a much larger area. This higher level of use and development can only be achieved with improvements in access including construction of new roads and trails. The result would be a significant increase in recreation opportunities for people with limited means or skill to experience Alaska. Only Alternative F proposes to maintain any significant amount of Primitive recreation opportunities on the Kenai Peninsula.

Figure 3-60d: ROS settings by alternative – Kenai Peninsula.



Recreation Infrastructure and Capacities

In all alternatives, the allocation of management prescriptions on the Kenai Peninsula geographic area are designed to be most responsive to the need for increases in recreation infrastructure and capacity. All of the alternatives allow for development of recreation facilities and infrastructure. Alternatives C, D, E, F, the No Action Alternative, and the Preferred Alternative focus development of facilities within the existing road corridor. Only Alternatives A and B allow for development outside the existing road corridor. Table 3-57a displays the proposed number of facilities that may be developed on the Kenai Peninsula.

Table 3-57a: Developed recreation facilities by alternative – Kenai Peninsula.

	Alternative								
	No Existing	Action	Preferred	A	B	C	D	E	F
CAMPGROUNDS									
PAOT-days	577,297	617,857	600,957	617,857	617,857	617,857	607,717	597,577	597,577
No. of campgrounds	14	18	17	18	18	18	17	16	16
No. of campsites (within campgrounds)	415	655	555	655	655	655	595	535	535
No. of campsites available during annually	44,172	79,692	64,892	79,692	79,692	79,692	70,812	61,932	61,932
CABINS									
PAOT-days	43,380	61,380	54,180	58,980	58,980	61,380	61,380	58,980	51,780
No. of cabins	19	34	28	32	32	34	34	32	26
No. of cabin nights available annually	5,844	9,594	8,094	9,094	9,094	9,594	9,594	9,094	7,594
DAY USE SITES									
PAOT-days	549,719	562,819	569,269	582,169	562,819	562,819	549,719	549,719	549,719
No. of sites	17	20	20	24	20	20	17	17	17
TRAILHEADS									
PAOT-days	44,272	142,822	166,912	186,622	223,852	196,477	149,392	111,067	90,262
No. of trailheads	18	26	32	30	33	31	30	26	24

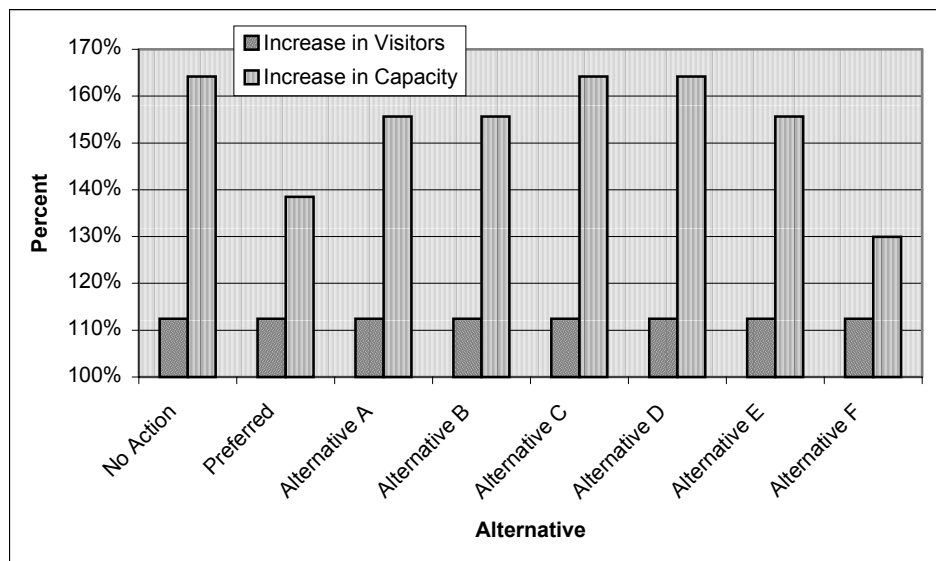
In addition to facilities, new access routes that open areas currently difficult to access without special equipment or skill, are allowed in all alternatives (Table 3-57b). All of the alternatives propose to increase the miles of trail on the Kenai Peninsula. Only Alternative B proposes any roads solely to provide recreation access to areas currently unroaded. All the alternatives propose roads associated with recreation facility development or resource extraction (primarily timber management).

Table 3-57b: Total trails and road miles by alternative – Kenai Peninsula.

	Alternative								
	Existing	No	Preferred	A	B	C	D	E	F
		Action							
Miles of Trail	345	412	504	461	447	489	489	431	390
Miles of New Road (not associated with rec site development or timber management)		0	0	0	16	0	0	0	0
Miles of New Road (associated with rec site development)		19	0	27	25	24	11	11	9
Miles of New Road (associated with timber management)		13	0	15	9	0	0	0	0

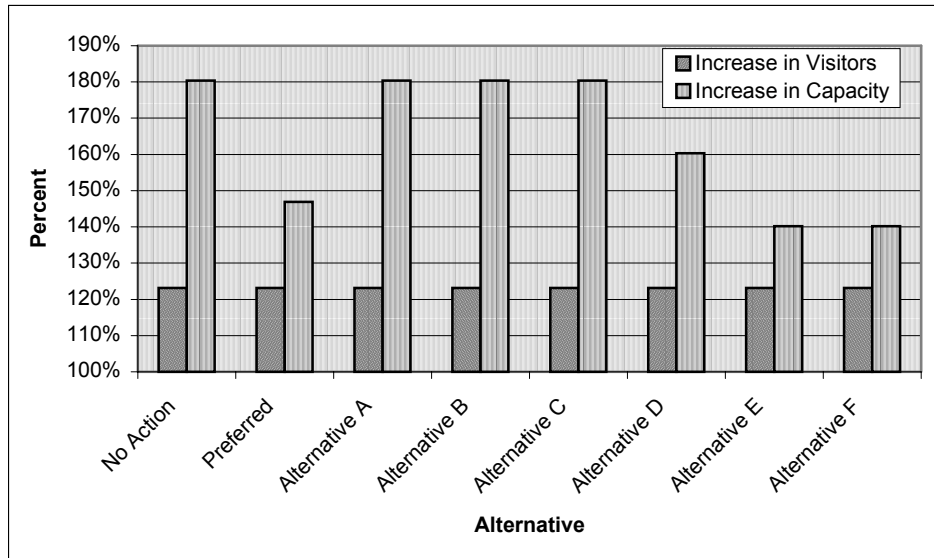
For developed recreation opportunities, all the alternatives would increase the available capacity. This is most critical for cabins and campgrounds, both of which are at or near capacity (see Affected Environment this section).

For recreation cabins, all the alternatives would allow building more cabins on the Kenai Peninsula. Based on the themes of the alternatives, Alternatives C, D and the No Action Alternative propose the most cabins, and Alternative F the fewest. Figure 3-60e shows the percent increase in cabin capacity in relation to the projected increase in cabin use. All alternatives project that capacity would exceed the projected demand by the Year 2010. The Kenai Peninsula cabins are already heavily used and at capacity. They are often reserved well in advance which may indicate that there may be an unfulfilled demand for cabins that is not reflected in the projected use. As a result, the excess capacity shown in Figure 3-60e may actually be less.

Figure 3-60e: Projected cabin capacity vs. projected cabin use – Kenai Peninsula.

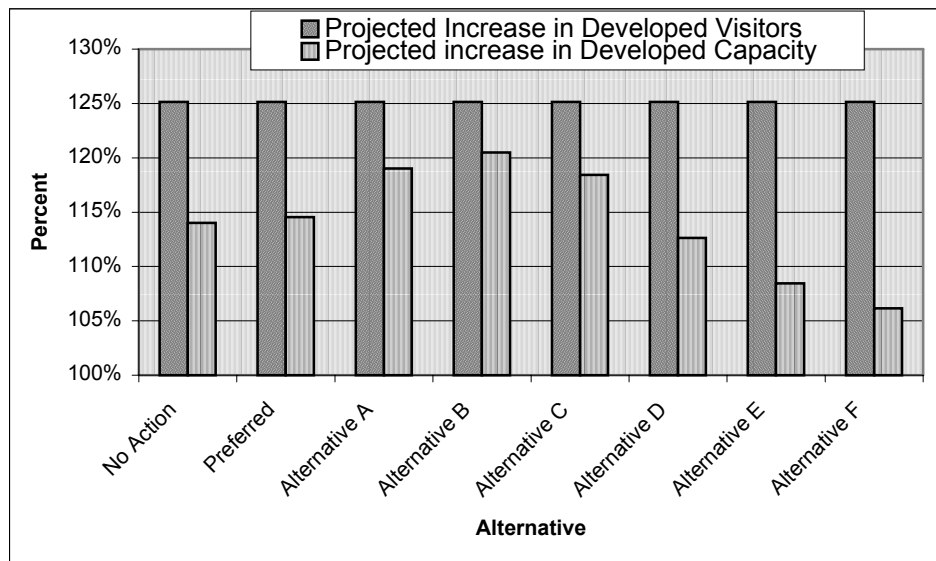
All of the alternatives also propose increasing the campground capacity. Alternatives propose developing two to four campgrounds with 120 to 240 individual camping units. Projections show camping use to be increasing. Based on current occupancy and crowding at campgrounds and projections for camping use, the addition of two to four campgrounds would meet the demand by the year 2010 (Figure 3-60f).

Figure 3-60f: Projected camping capacity vs. projected camping use – Kenai Peninsula.



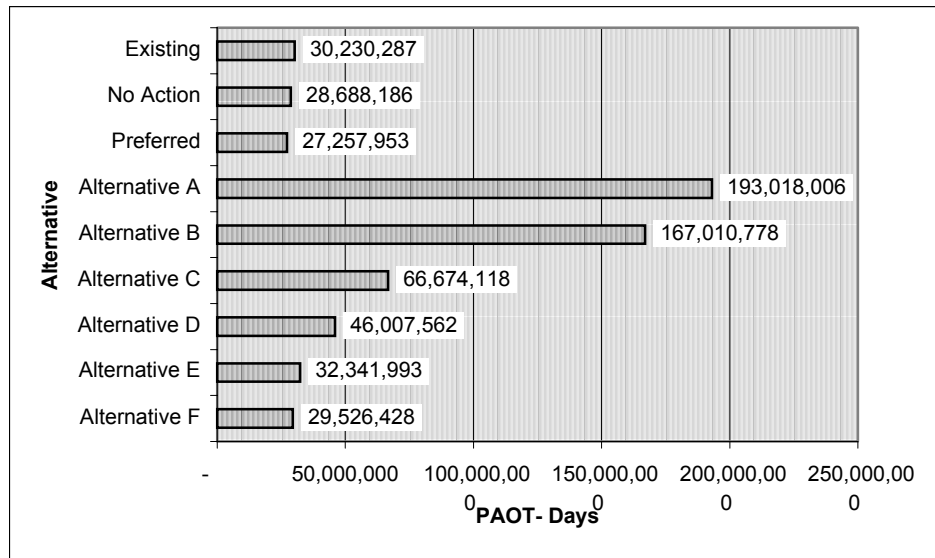
Overall, the projections for developed recreation use do indicate that demand for developed recreation opportunities and facilities would grow faster than the capacity in all alternatives. Alternative B most closely responds to the projected demand (Figure 3-60g). This is a little misleading because there is currently an excess capacity in the developed recreation infrastructure (not including cabins or campgrounds) on the Kenai Peninsula of 10 to 20 percent (USDA Forest Service 1998c). The current excess capacity combined with additional capacity proposed should make the difference much less. Considering that, Alternatives A, B and C should meet expected use in the year 2010. All the other alternatives would be close to meeting demand. This assessment does not consider any increases in capacity by other landowners or private businesses.

Figure 3-60g: Developed recreation capacity vs. projected use – Kenai Peninsula.



Dispersed recreation opportunities and capacities vary between alternatives. Alternatives A and B have the highest capacities because of the high proportion of Roaded ROS settings throughout the Kenai Peninsula. The Roaded ROS class has a much higher capacity than other ROS classes. All the other alternatives have a much lower capacity because only the road corridor is proposed for higher density recreation use (Figure 3-60h). In all alternatives, developed recreation capacity is in addition to the dispersed capacity.

Figure 3-60h: Dispersed recreation capacity – Kenai Peninsula.



Recreation Conflicts and Situations

The major conflict or situation addressed in the alternatives for the Kenai Peninsula geographic area is the allocation of winter season motorized and nonmotorized activities, and to a lesser degree, the summer season.

Winter motorized and nonmotorized allocations have been one of the most controversial topics of the Forest Plan revision. Many of the alternatives were specifically designed to allow or restrict motorized and nonmotorized uses on the Kenai Peninsula to provide separation of the uses.

The major factor surrounding the motorized and nonmotorized situation is noise. Additionally, there is an incompatibility of motorized and nonmotorized uses perceived by some users, especially the nonmotorized users. Issues surrounding this difference are safety concerns, speed of machines and air pollution in wildland settings. Some of this is simply a basic, gut-level value held by individuals desiring nonmotorized opportunities without the presence of any motorized activities. As motorized uses have expanded, there has been a certain amount of displacement of nonmotorized users from areas traditionally used.

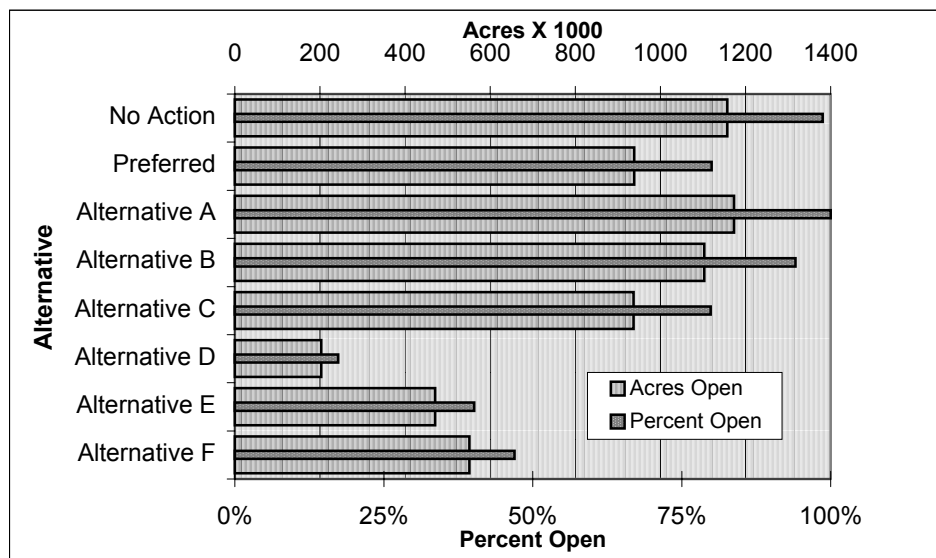
Many factors contribute to noise. The loudness, duration, and type of noise determine if a sound will be annoying or background. For helicopters, it is the main rotor blades responsible for much of the sound. The “blade slap” is the most disturbing component of the noise due to its impulsive nature and because it occurs in the mid-frequency range where human hearing is most sensitive. With snowmachines, it is often the continuous or near continuous revving of the engines that create the noise that annoys people.

A number of other factors can influence the loudness of sound. Distance from the sound source affects the intensity. The atmosphere absorbs some sound. Other environmental factors can influence sound intensity or duration including wind, terrain, and vegetation. A Forest Service study concluded that the sound levels from helicopters do not pose a threat to hearing safety (USDA Forest Service 1994). The snowmachine industry has adopted standards to limit the noise of snowmachines when they leave the factory.

The only acoustic impact to people resulting from helicopter or snowmachine sounds is that of annoyance to those who reside near helicopter or snowmachine travel routes or who recreate in backcountry areas where natural quiet is a primary component of the recreation experience. Any contact with snowmachines or helicopters may spoil their experience.

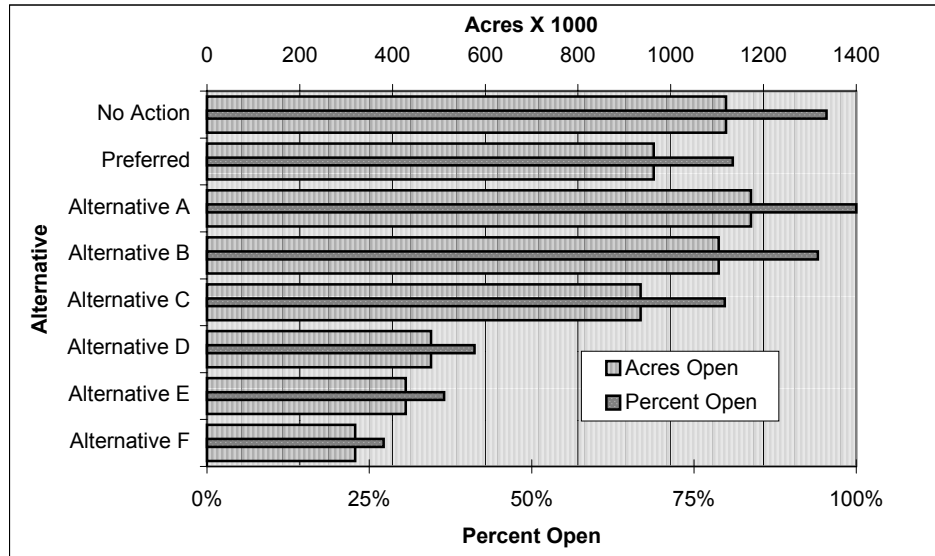
Winter snowmachine use is generally allowed in all alternatives. All of the alternatives, except Alternative A, identify specific areas of varying size that are closed to motorized uses (Figures 3-60i and 3-60j). Refer to Appendix H of the FEIS and the alternative maps for descriptions of specific areas that are closed to motorized use under each alternative.

Figure 3-60i: Acres available for winter snowmachine activity - Kenai Peninsula.



Winter helicopter access for heli-skiing is similar to snowmachine use. There are some slight differences, especially in the Preferred Alternative and Alternatives D and F. Alternatives D and the Preferred Alternative allocate slightly more area for helicopter access while Alternative F allocates slightly less for helicopter access.

Figure 3-60j: Acres available for winter helicopter activities – Kenai Peninsula.



Prince William Sound Geographic Area

Prince William Sound is wild and undeveloped. There is no developed infrastructure and only limited recreational facilities on National Forest System lands. The proposed alternatives for the Prince William Sound geographic area provide for the Primitive and Semi-primitive recreation settings of the Prince William Sound and allow limited development at nodes to meet anticipated demand for more recreation infrastructure and capacity. This demand is expected to result from the new road access to Whittier and increased services based in Valdez, Cordova, and Whittier, facilitating people's recreation in the Prince William Sound.

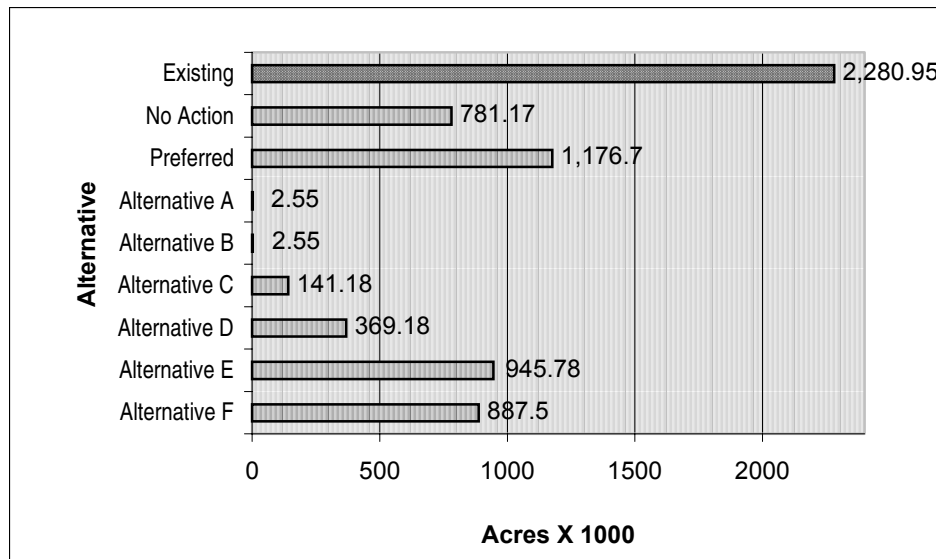
Note: The following analysis assumes alternatives are implemented as designed by the Revised Forest Plan, including the recommended prescriptions for the Nellie Juan-College Fiord Wilderness Study Area. The Wilderness Study Area will be managed under Forest Service regional manual direction to protect wilderness character until Congress considers the Wilderness Study.

Recreation Settings

All the alternatives, except Alternatives A and B, emphasize dispersed recreation management throughout the Sound with ROS classes of Primitive and Semi-primitive. In Alternatives A and B the ROS classes are Roaded and Semi-primitive.

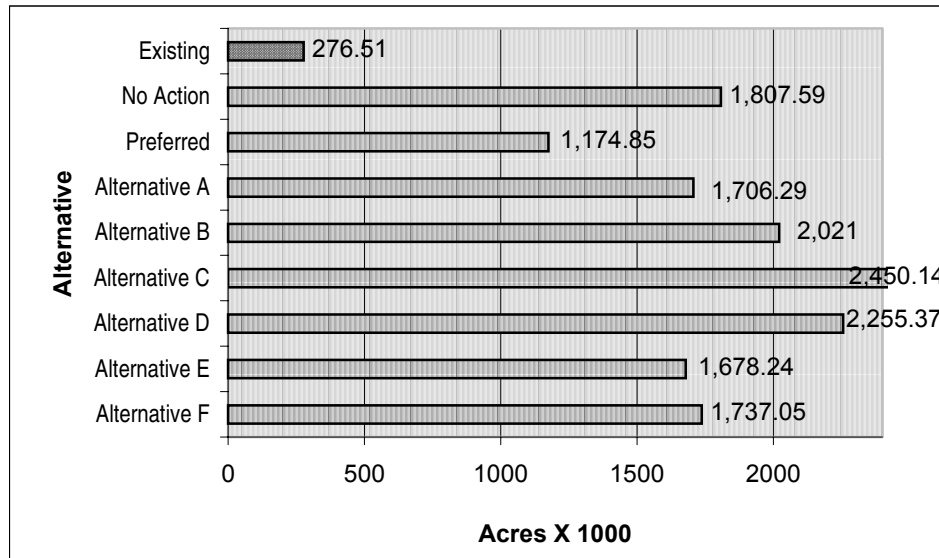
Under all of the alternatives, the quantity of Primitive ROS settings found currently in the Prince William Sound would not be managed at the existing level (Figure 3-61a). Alternatives E, F, the No Action Alternative, and the Preferred Alternative propose continued management of 35 to 51 percent of the existing Primitive settings over large areas of Prince William Sound. Alternative C proposes one area in the Primitive ROS class at the head of Unakwik Inlet. Alternative D has three Primitive ROS areas: Icy Bay, Kings Bay and Unakwik Inlet. No Primitive ROS opportunities would be provided under Alternatives A and B, except on Green Island.

Figure 3-61a: Primitive ROS by alternative - Prince William Sound.



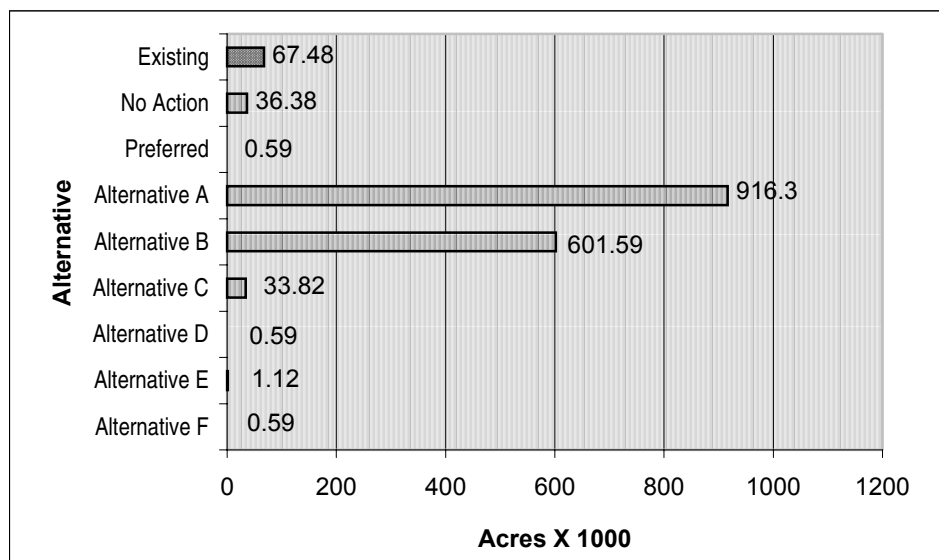
In the Prince William Sound geographic area, semi-primitive recreation settings are the primary management emphasis in all alternatives except Alternatives A and B (Figure 3-61b). All the alternatives propose to increase management for Semi-primitive recreation opportunities. Most of the areas proposed for Semi-primitive management are inventoried as Primitive ROS settings. All of the alternatives, except Alternatives A and B, proposed managing for Semi-primitive recreation settings for varying distances or radii from major entry points to the Sound (Whittier, Valdez and Cordova). Managing for a Semi-primitive recreation opportunity in combination with the proposed Primitive management (except Alternatives A and B) would allow the Forest to maintain the wild and natural character of most of Prince William Sound while also improving access (primarily trails) and developing additional recreation sites (cabins, viewing areas, etc.). Alternatives A and B propose to manage several large areas of the Sound for Semi-primitive recreation opportunities in combination with Roaded settings. The Semi-primitive settings are located away from the major entry points to the Sound, with Roaded recreation settings proposed for areas near the entry points.

Figure 3-61b: Semi-primitive ROS by alternative – Prince William Sound.



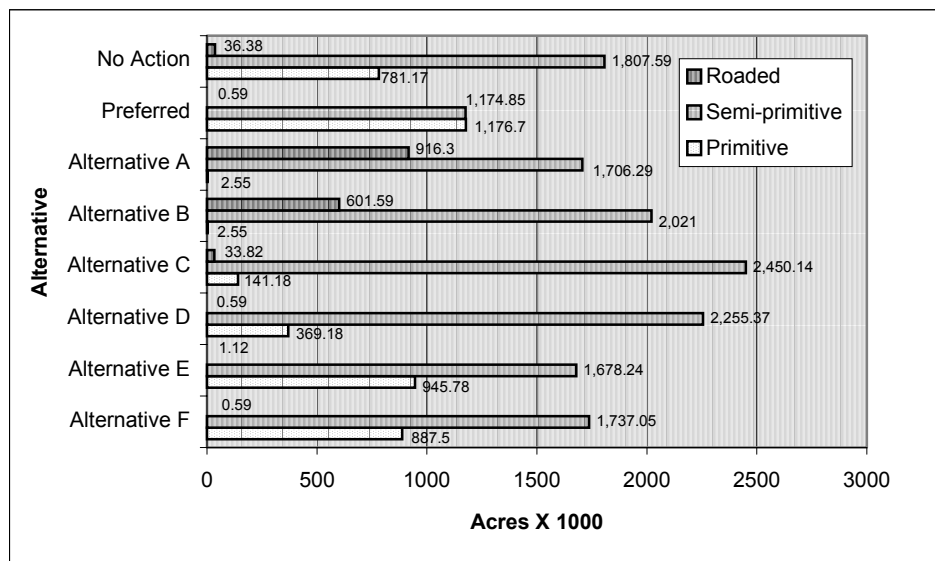
Only Alternatives A and B propose any significant change from the existing Roaded ROS classes (Figure 3-61c). Both Alternatives A and B propose that large areas of Prince William Sound be managed for Roaded ROS opportunities. Most of the areas proposed for Roaded ROS management are currently inventoried as Primitive. Both alternatives propose management of the major portals to the Sound for Roaded recreation opportunities. Managing for a Roaded recreation setting would allow the Forest Service to significantly increase the density of recreation use and activities, develop a variety of facilities, and improve access.

Figure 3-61c: Roaded ROS by alternative – Prince William Sound.



In comparing the alternatives, there is not a significant variation in the proposed recreation settings, except for Alternatives A and B (Figure 3-61d). All but Alternatives A and B emphasize a mix of Primitive and Semi-primitive recreation settings for most of Prince William Sound. This approach would maintain the current emphasis on dispersed recreation use, facilities, and activities throughout the Sound, maintaining its wild character. Some outdoor skills and knowledge will be required to experience this wild Alaska and some may choose to participate through the use of permitted outfitters and guides and other commercial recreation service opportunities. Alternatives A and B emphasize a mix of Semi-primitive and Roaded recreation settings, allowing for higher recreation use and development over a much larger area, especially adjacent to the major portals to the Sound. Facilities for larger groups and higher densities of people would be allowed. This higher level of use and development can only be achieved with improvements in access. This approach would result in a significant increase in recreation opportunities for people with limited means or skill to experience Alaska.

Figure 3-61d: ROS settings by alternative – Prince William Sound.



Recreation Infrastructure and Capacities

All of the alternatives are responsive to the need for increases in recreation infrastructure and capacity in Prince William Sound. Alternatives A and B meet this need by including large areas in the Roaded ROS class, which allows for construction of developed recreation facilities and high levels of visitors. The other alternatives make use of two approaches that allow for more development in otherwise dispersed settings: the Backcountry Groups prescription and the Semi-primitive Groups ROS class. The Backcountry Groups prescription allows development nodes in which services and facilities would be provided in backcountry settings. The Semi-primitive Groups ROS class allows for limited

areas of concentrated visitor use and limited facilities. Table 3-57c displays the proposed number of facilities that may be developed in Prince William Sound.

Table 3-57c: Developed recreation facilities by alternative - Prince William Sound.

	Alternative								
	No								
	Existing	Action	Preferred	A	B	C	D	E	F
CAMPGROUNDS									
PAOT-days	0	0	0	0	0	0	0	0	0
No. of campgrounds	0	0	0	0	0	0	0	0	0
CABINS									
PAOT-days	33,766	50,566	52,966	62,566	62,566	61,366	55,366	50,566	36,166
No. of cabins	16	30	32	40	40	39	34	30	18
No. of cabin nights available annually (340 day managed season)	3,288	6,088	6,488	8,088	8,088	7,888	6,888	6,088	3,688
DAY USE SITES									
PAOT-days	11,900	11,900	12,975	14,050	12,975	11,900	11,900	11,900	11,900
No. of sites	1	1	2	3	2	1	1	1	1
TRAILHEADS									
PAOT-days	0	0	8,600	0	0	0	0	0	0
No. of trailheads	0	0	3	0	0	0	0	0	0
DEVELOPMENT NODES/SITES									
Backcountry Groups Prescription	0	0	2	0	0	18	0	0	0
Semi-primitive Groups ROS Class	0	0	0	0	0	10	4	3	4

Source: USDA Forest Service 1998 INFRA database (USDA Forest Service 1998c).

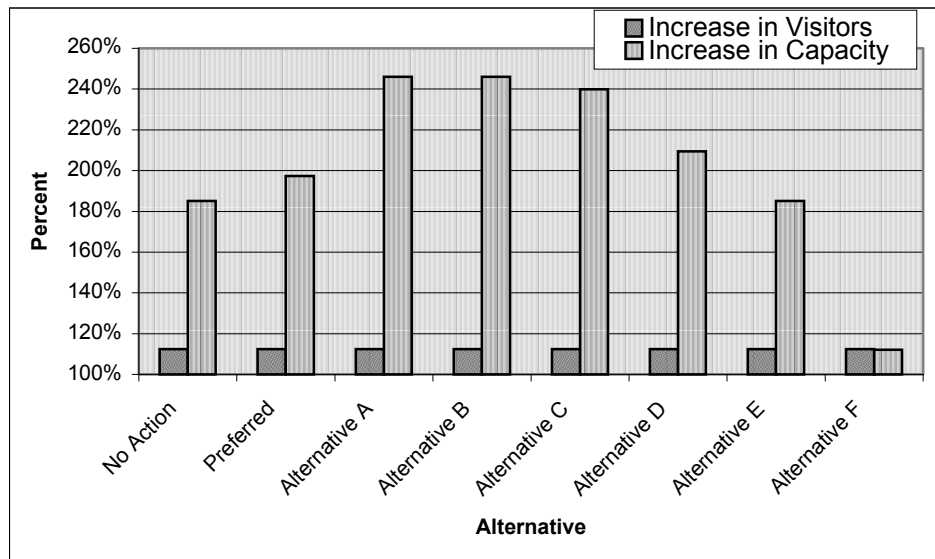
In addition to facilities, new trails that open areas currently difficult to access without special equipment or skill are allowed in all alternatives. All of the alternatives propose to increase the miles of trail in Prince William Sound. No roads are proposed in any alternative solely to provide recreation access. Alternatives A, B and the No Action Alternative propose roads associated with resource extraction (primarily timber management) (Table 3-57d).

Table 3-57d: Total trails and road miles by alternative - Prince William Sound.

	Alternative								
	No								
	Existing	Action	Preferred	A	B	C	D	E	F
Miles of Trail	69	99	146	169	194	193	155	106	97
Miles of New Road (not associated with recreation site development or timber management)		1	1	1	1	1	1	1	1
Miles of New Road (associated with rec site development)		0	0	0	0	0	0	0	0
Miles of New Road (associated with timber management)		22	0	32	21	0	0	0	0

All the alternatives would allow building more cabins in Prince William Sound. Based on the themes of the alternatives, Alternatives A, B and C propose the most cabins, and Alternative F the fewest. Figure 3-61e shows the percent increase in cabin capacity in relation to the projected increase in cabin use. Cabin capacity under all alternatives except Alternative F would exceed the projected demand by 2010. Existing cabins in western Prince William Sound are already used at capacity. They are often reserved well in advance which may indicate unfulfilled demand for cabins that is not reflected in the projected use. As a result, the difference between the projected capacities shown in Figure 3-61e may actually be less.

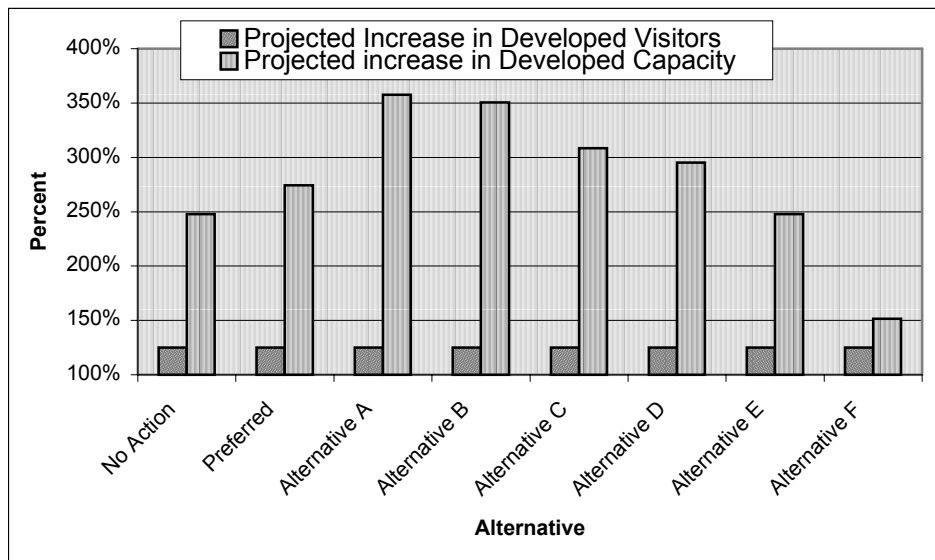
Figure 3-61e: Projected cabin capacity vs. projected cabin use – Prince William Sound.



No new developed campgrounds are proposed in Prince William Sound. Increased camping capacity is proposed as hardened, dispersed campsites. These new campsites are included in the dispersed recreation discussion that follows.

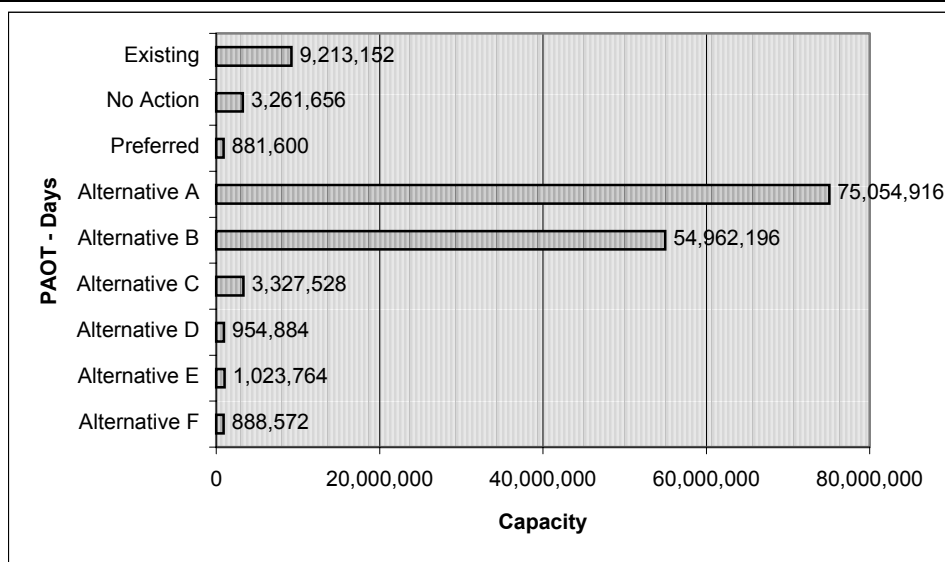
Overall, the projections indicate the demand for developed recreation opportunities and facilities would be met by the projected capacity in all alternatives. Alternative A, B, and C would have the highest excess capacity, Alternative F the least (Figure 3-61f). This result may be somewhat misleading, however, because there is currently a shortage in capacity, especially in western Prince William Sound. Also, because the emphasis is on dispersed recreation opportunities in Prince William Sound, the only increase in developed capacity is in recreation cabins. Additional developed capacity that may occur at development nodes (Backcountry Groups prescription and Semi-primitive Groups ROS) is not shown. This assessment does not consider any increases in capacity by other landowners or private businesses.

Figure 3-61f: Developed recreation capacity vs. projected use – Prince William Sound.



Dispersed recreation opportunities and capacities vary between alternatives. Alternatives A and B have the highest capacities because of the high proportion of Roaded ROS settings throughout Prince William Sound. The Roaded ROS Class has a much higher capacity than other ROS classes. All the other alternatives have a much lower capacity because of the emphasis on Primitive and Semi-primitive recreation settings (Table 3-61g). In all alternatives, developed recreation capacity is in addition to the dispersed capacity.

Figure 3-61g: Dispersed recreation capacity – Prince William Sound.



Recreation Conflicts and Situations

The major conflict or situation addressed in the alternatives for the Prince William Sound geographic area is the allocation of prescriptions and recreation settings in response to potential changes in use as a result of improved access to Whittier.

Many of the alternatives were specifically designed to allow for more intense recreation management within a “weekend radius” of Whittier and, to a lesser extent, Valdez and Cordova. Alternatives A and B, in particular, allocate Roded ROS classes in the weekend radius. This approach would allow for higher density recreation use and development over broad areas of the western Sound. The other alternatives allocate Semi-primitive ROS classes in this weekend radius, but also identify varying numbers of nodal development points. This approach maintains a generally undeveloped character in the Sound, but allows for notes of concentrated developed recreation to serve increased demand.

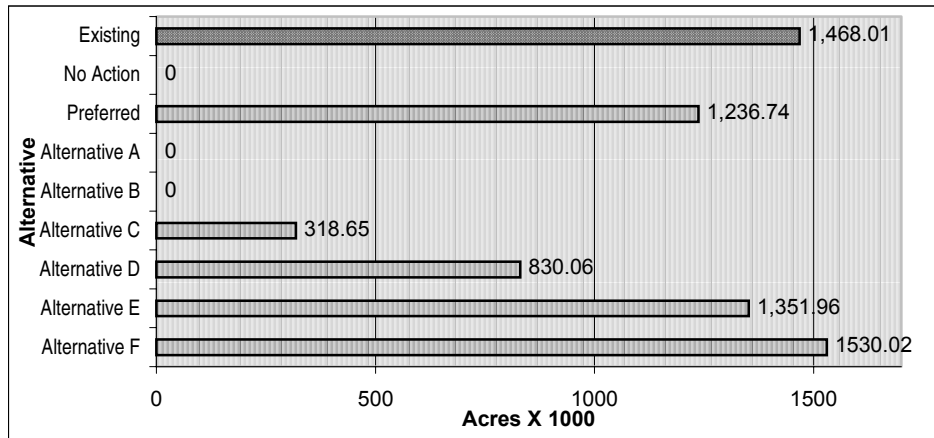
Copper River Delta Geographic Area

Except for a narrow corridor along the 50-mile long Copper River Highway from Cordova to the Million Dollar Bridge, the Copper River Delta geographic area is wild and undeveloped. Limited developed infrastructure exists in this road corridor, and very limited recreational facilities, mostly recreational cabins, away from the road. The alternatives for the Copper River Delta geographic area emphasize management for the Primitive and Semi-primitive recreation settings of the Delta with higher intensities of management and development along the road corridor.

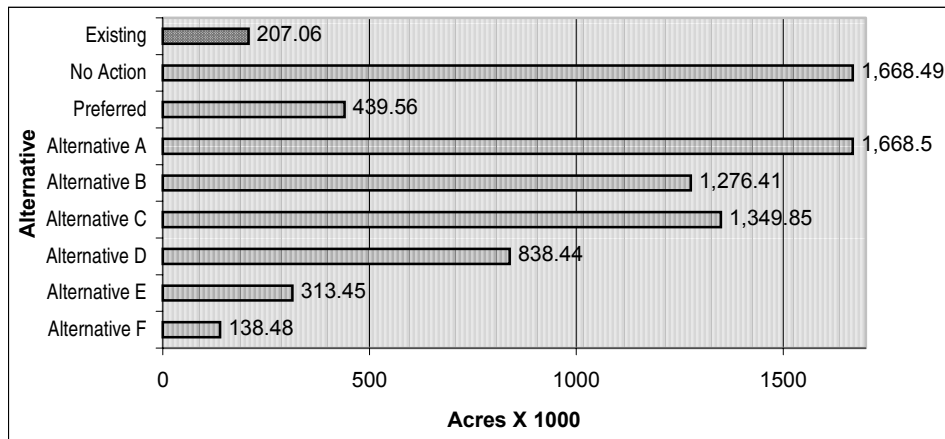
Recreation Settings

All the alternatives propose dispersed recreation management throughout the Copper River Delta geographic area, except along the road corridor. More intense management for developed recreation is proposed in the road corridor, ranging from ½ mile to ¼ mile on either side of the Copper River Highway. The ROS classes proposed in all alternatives are Primitive and Semi-primitive except in Alternative B, where a large area north of the Copper River Highway is proposed for Roded ROS class management.

The alternatives range widely in their proposed management of the existing quantity of Primitive ROS settings found on the Delta (Figure 3-62a). Alternative F proposes to increase Primitive management slightly compared to existing, and Alternatives E and the Preferred Alternative propose to maintain 75 to 85 percent of the existing Primitive settings over large areas of the Delta. Alternative D proposes a large area for Primitive management on the southeast Delta and Alternative C has an area on the northeast Delta. Alternatives A, B, and the No Action Alternative would not maintain any Primitive ROS opportunities.

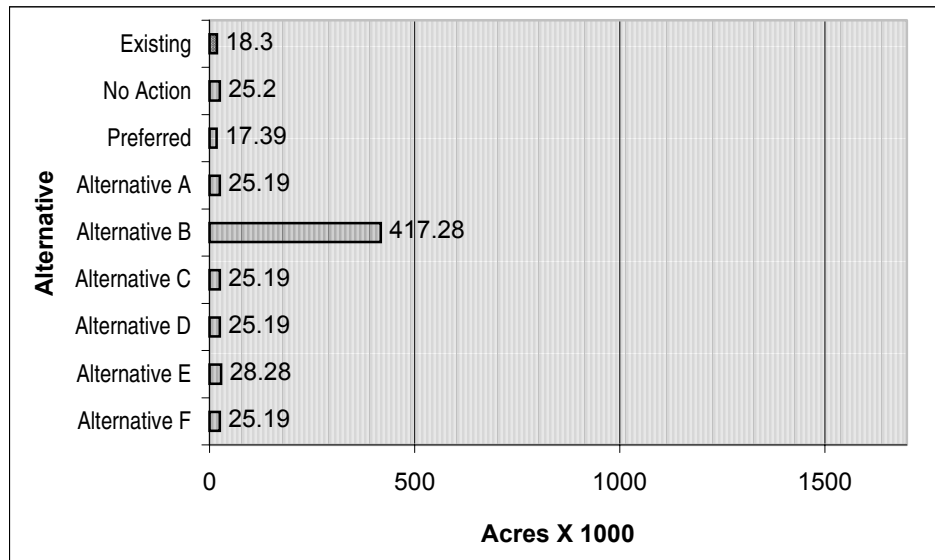
Figure 3-62a: Primitive ROS by alternative – Copper River Delta.

In the Copper River Delta geographic area, all the alternatives propose to increase management for Semi-primitive recreation opportunities over existing levels (Figure 3-62b). Most of these Semi-primitive settings would come from existing Primitive settings, where management would allow the setting to move from the existing very dispersed and undeveloped character to one allowing facilities at a slightly higher density and number. This migration from Primitive to Semi-primitive recreation settings is greatest in Alternatives A, B, C, D, and the No Action Alternative.

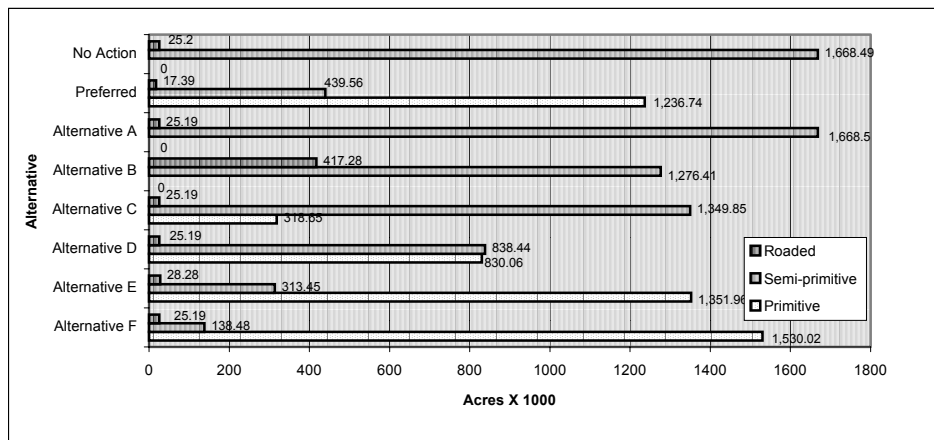
Figure 3-62b: Semi-primitive ROS by alternative – Copper River Delta.

Only Alternative B proposes any significant change from the existing Roaded ROS classes (Figure 3-62c). Alternatives B propose that a large area north of the Copper River Highway be managed for Roaded ROS opportunities. Most of the area proposed for Roaded ROS management is currently inventoried Primitive. Managing for a Roaded recreation setting allows for significant increases in the density of recreation use and activities.

Figure 3-62c: Roaded ROS by alternative – Copper River Delta.



Of the three geographic areas, the Copper River Delta has the greatest variation in recreation settings between alternatives (Figure 3-62d). All the alternatives propose a mix of Primitive and Semi-primitive recreation settings for most of the Copper River Delta. It is the proportion of Primitive to Semi-primitive that swings widely, from a nearly 1:1 ratio (Alternative D) to an 11:1 ratio (Alternative F). Alternative A, B, and the No Action Alternative emphasize management for Semi-primitive recreation settings, with no Primitive settings. Overall, the Primitive and Semi-primitive recreational opportunities of the Copper River Delta would be maintained in all alternatives, continuing the current emphasis on dispersed recreation use, facilities, and activities away from the Copper River Highway. Experiencing a wilder Alaska requires some outdoor skill and knowledge. Only Alternative B emphasizes a mix of Semi-primitive and Roaded recreation settings, allowing for higher recreation use and development over a much larger area. Facilities for larger groups and higher densities of people would be allowed. This higher level of use and development can only be achieved with improvements in access, resulting in a significant increase in recreation opportunities for people with limited means or skill to experience Alaska.

Figure 3-62d: ROS settings by alternative – Copper River Delta.

Recreation Infrastructure and Capacities

In all alternatives except Alternatives B, the allocation of management prescriptions in the Copper River Delta geographic area are designed to continue the emphasis on dispersed recreation opportunities away from the Copper River Highway. Alternative B has a mix of dispersed and developed recreation opportunities. All of the alternatives are responsive to the need for increases in recreation infrastructure and capacity along the Copper River Highway. All of the alternatives allow for some development of recreation facilities and infrastructure. Table 3-57e displays the proposed number of facilities that may be developed in the Copper River Delta geographic area.

Table 3-57e: Developed recreation facilities by alternative - Copper River Delta.

	Alternative								
	No Existing	No Action	Preferred	A	B	C	D	E	F
CAMPGROUNDS									
PAOT-days	3,825	20,725	20,725	20,725	20,725	20,725	20,725	20,725	20,725
No. of campgrounds	1	1	1	1	1	1	1	1	1
No. of campsites (within campgrounds)	5	25	25	25	25	25	25	25	25
No. of campsites available annually (196 day managed season)	1,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
CABINS									
PAOT-days	16,434	20,034	21,234	23,634	23,634	23,634	21,234	18,834	16,434
No. of cabins	8	11	12	14	14	14	12	10	8
No. of cabin nights available annually (340 day managed season)	1,129	1,729	1,929	2,329	2,329	2,329	1,929	1,529	1,129
DAY USE SITES									
PAOT-days	77,646	77,646	86,246	81,946	81,946	77,646	77,646	77,646	77,646
No. of sites	13	13	16	14	14	13	13	13	13
TRAILHEADS									
PAOT-days	33,072	37,587	43,062	43,062	43,062	43,062	43,062	43,062	37,587
No. of trailheads	9	10	11	11	11	11	11	11	10

Source: USDA Forest Service 1998 INFRA database (USDA Forest Service 1998c).

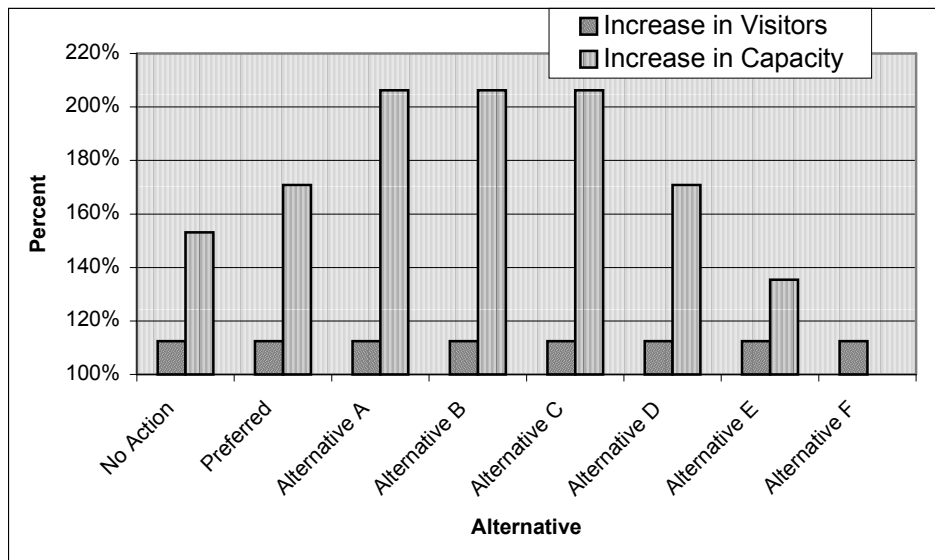
In addition to facilities, new trails that open areas currently difficult to access without special equipment or skill are allowed in all alternatives. All of the alternatives propose to increase the miles of trail in the Copper River Delta (Figure 3-57f). No roads are proposed in any alternative solely to provide recreation access. All the alternatives propose roads associated with recreation site development and Alternatives A, B and the No Action Alternative propose new roads for resource extraction (primarily timber management).

Table 3-57f: Total trails and road miles by alternative - Copper River Delta.

	Alternative								
	Existing	No Action	Preferred	A	B	C	D	E	F
Miles of Trail	66	122	122	134	146	151	133	124	108
Miles of New Road (not associated with rec site development or timber management)		0	0	0	0	0	0	0	0
Miles of New Road (associated with rec site development)		3	7	5	5	4	4	4	3
Miles of New Road (associated with timber management)		9	0	34	4	0	0	0	0

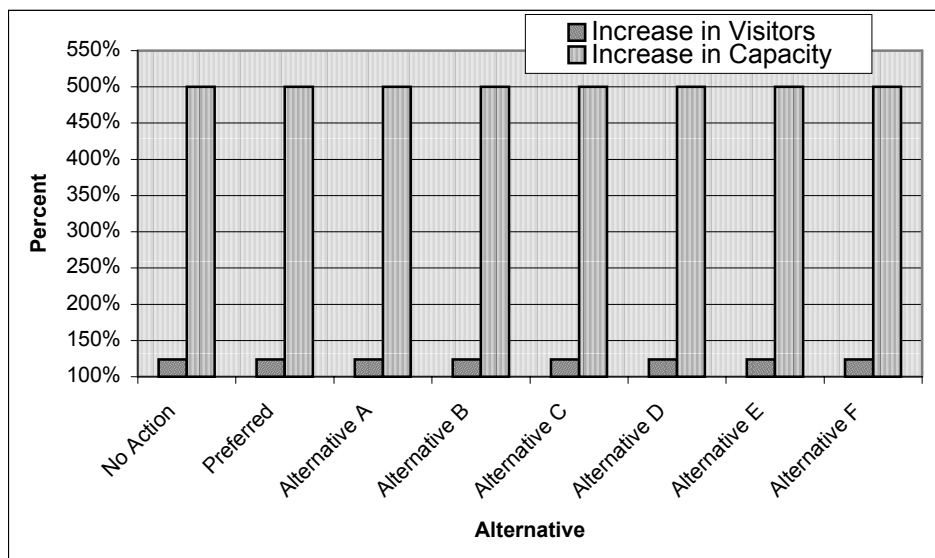
The Copper River Delta has limited developed recreation opportunities away from the Copper River Highway. All the alternatives would allow building of over night camping facilities along the highway corridor and more cabins throughout the Copper River Delta. Based on the themes of the alternatives, all the alternatives, except Alternative F, propose two to six new cabins. Alternative F proposes no new cabins. Figure 3-62e shows the percent increase in cabin capacity in relation to the projected increase in cabin use. Capacity under all alternatives except Alternative F would exceed the projected demand by the year 2010.

Figure 3-62e: Projected cabin capacity vs. projected cabin use – Copper River Delta.



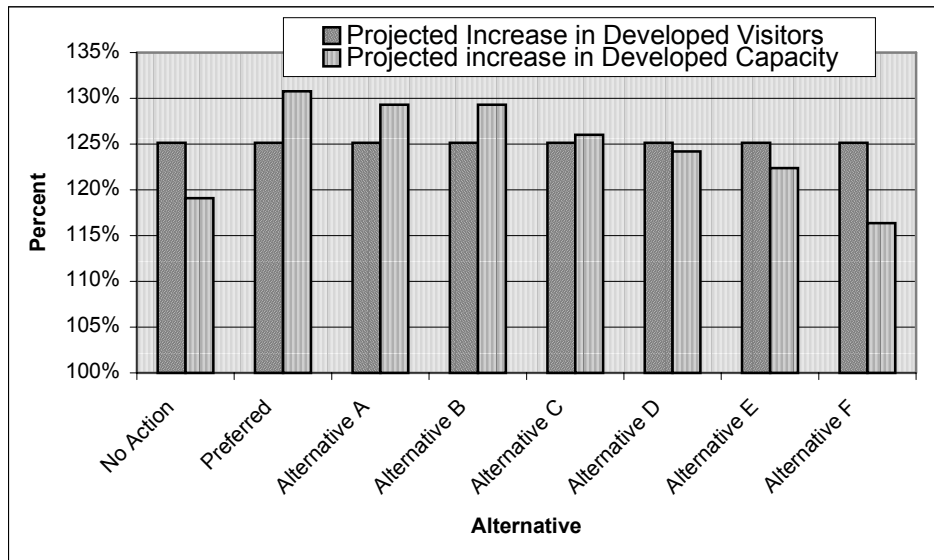
All the alternatives propose one new developed campground on the Copper River Delta. There are currently only five developed camping sites on the Delta and have relatively low use. Figure 3-62f shows the proposed capacity greatly exceeding the projected demand for overnight camping. This result is misleading in that the existing sites are for walk-in camping and a full-service campground is proposed. Such a facility is expected to attract much higher use than currently experienced. Also, a road or trail to Chitna and additional recreation development along the Copper River Highway would attract more people.

Figure 3-62f: Projected camping capacity vs. projected camping use – Copper River Delta.



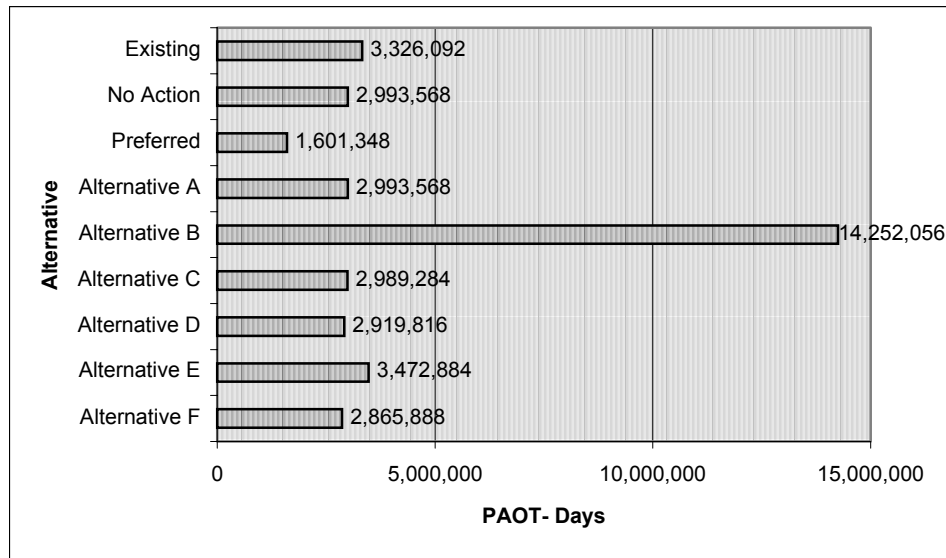
Overall, projections indicate the demand for developed recreation opportunities and facilities will be close to the projected capacity in Alternatives C and D; projected demand would exceed projected capacity slightly in Alternatives E, F and the No Action Alternative; and, projected capacity would exceed projected demand in Alternatives A, B, and the Preferred Alternative (Figure 3-62g). The range among the alternatives is relatively small.

Figure 3-62g: Developed recreation capacity vs. projected use – Copper River Delta.



Dispersed recreation opportunities and capacities do not vary among alternatives, except Alternative B. Alternative B has the highest capacity because of one large area of Roaded ROS setting on the Copper River Delta. The Roaded ROS Class has a much higher capacity than other ROS classes. All the other alternatives have a much lower capacity because of the emphasis on Primitive and Semi-primitive recreation settings (Figure 3-63). In all alternatives, developed recreation capacity is in addition to the dispersed capacity.

Figure 3-63: Dispersed recreation capacity – Copper River Delta.



Recreation Conflicts and Situations

The major conflict or situation addressed in the alternatives for the Copper River Delta geographic area is the allocation of prescriptions and recreation settings in response to potential changes in access, significant national interest in wilderness and fish and wildlife management, and strong local interest in maintaining the status quo for recreation opportunities.

Many of the alternatives were specifically designed to allow for more intense recreation management within the Copper River Highway road corridor and along the road to Carbon Mountain. All the alternatives allocate Roaded ROS classes along these corridors. This approach allows for higher density of recreation use and development along these access routes while maintaining the Primitive and Semi-primitive recreation settings away from the roads. The rest of the Delta would be managed to provide Primitive and Semi-primitive recreation opportunities consistent with interests to manage fish and wildlife habitats and current activities.

Cumulative Effects

Recreation and Tourism cumulative effects will be addressed by the three major topics identified in the consequences section:

1. Recreation Settings;
2. Recreation infrastructure and capacity; and
3. Recreation conflicts and situations.

Recreation Settings

The range and distribution of recreation settings across the Forest in all alternatives is very consistent with adjacent lands to the Chugach National Forest. On the Kenai Peninsula, the settings of all alternatives are consistent and compatible with adjacent lands of the Kenai Fjords National Park, Kenai National Wildlife Refuge and Chugach State Park. Emphasis on concentrated development opportunities along existing road corridors and little or no recreation development away from main travel corridors complements adjacent lands and minimizes any effects in areas currently undeveloped. Alternatives proposing Wilderness designations adjacent to Wilderness in the Refuge or the National Park (Alternatives D, E and F) would be more consistent with management in those areas than non-wilderness prescriptions and management.

In Prince William Sound the generally undeveloped recreation settings in all alternatives compliment State Marine Parks within the Forest and State of Alaska and Bureau of Land Management lands to the north. Emphasis for any major development is on non-National Forest System lands. While there is no designated Wilderness adjacent to Prince William Sound, the adjacent land management is essentially wilderness in character, providing similar settings throughout the area.

On the Copper River Delta geographic area, the recreation settings in all alternatives are very compatible with adjacent lands to the north and east in Wrangell-St. Elias National Park and State of Alaska and Bureau of Land Management lands. Alternatives proposing Wilderness adjacent to Wrangell-St. Elias National Park offer a higher degree of consistency, but alternatives proposing Category 1 and 2 prescriptions are also very compatible.

Recreation Infrastructure and Capacity

All of the alternatives propose to increase the recreation infrastructure and capacity to some degree. In all alternatives, this increase is not intended to accommodate all the projected increases in recreation use throughout the region, but the Chugach National Forest's reasonable proportion of the anticipated increase. In all alternatives, increases in infrastructure and capacity are greatest on the Kenai Peninsula. This is consistent with the expected recreation settings and projected use. Additional infrastructure in Prince William Sound would be mostly dispersed consistent with the undeveloped and unroaded character in all alternatives and found on adjacent lands. On the Copper River Delta, any increase in infrastructure is along the Copper River Highway corridor with only

minimal increase away from the road corridor. Adjacent lands emphasize the same undeveloped character.

Recreation Conflicts and Situations

The major situation is the allocation of motorized and nonmotorized activities in summer and winter. This will be discussed in two parts: winter and summer.

Winter recreation motorized and nonmotorized access was the biggest and most controversial situation addressed in alternative development. The major conflict among recreation activities is between winter nonmotorized activities (cross country and backcountry skiing, snowshoeing, dog mushing) and motorized activities (snowmachining and heli-skiing). All of the alternatives, except the Preferred, allow winter snowmachine use across most of the Forest. The Preferred Alternative would be more restrictive in the Copper River Delta and Prince William Sound geographic areas. The Preferred Alternative has only slightly less winter snowmachine opportunity than is currently allowed. All of the Alternatives limit helicopter to some degree, with Alternatives D, E, and F, with major areas proposed for Wilderness designation, limiting helicopter opportunities the most. On the Kenai Peninsula, the cumulative effect of alternatives limiting motorized recreational access potentially displaces current users and moves them to other areas open on adjacent lands or within the Forest. Much of the half million acre Chugach State Park is closed to motorized access. Off road vehicles are allowed on two trails of the park: the Bird Creek Trail and, Sunday through Wednesday only, the Eklutna Lakeside Trail. Snowmobiles are allowed on 5 areas of the park when snow conditions are adequate. Kenai Fjords National Park has limited winter motorized access; the same is true for the Kenai National Wildlife Refuge to the west. Limiting access may concentrate more users within areas open on the Forest and areas adjacent to the Forest or to the north of Anchorage.

Limits on motorized access would provide areas for nonmotorized recreation activities, complementing a network of such areas through Southcentral Alaska. Alternatives C, D, E and the Preferred complement this the best.

In Prince William Sound, there is limited winter activity of any type. Alternatives recommending areas for Wilderness designation would limit possible helicopter skiing opportunities on the Forest. Areas adjacent to the Forest do currently allow for helicopter skiing access. Extremely remote and rugged terrain make motorized surface use very difficult except for a few areas around the edges of the Prince William Sound geographic area. Opportunities for nonmotorized activities are better, but like the motorized activities, access is very difficult for all users without boat or air support.

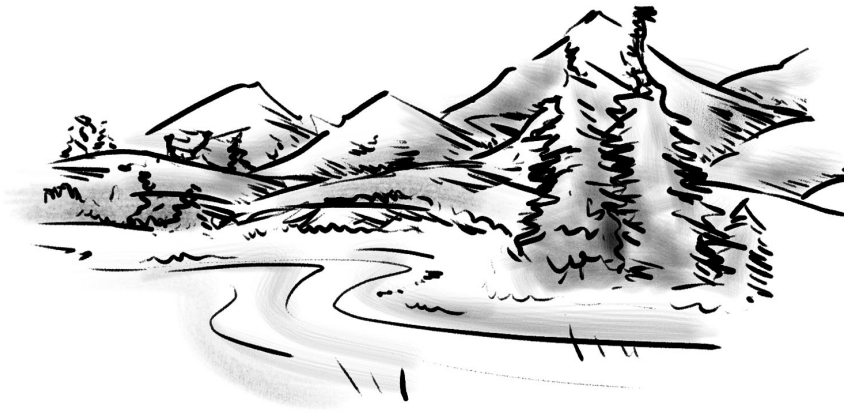
On the Copper River Delta, alternatives limiting motorized access would significantly reduce opportunities for recreation activity, as there are no reasonably close accessible lands. Lands to the north are National Park and lands to the east are very hard to get to. Helicopter skiing opportunities are available north of Cordova on State of Alaska lands. Alternatives providing for helicopter access, especially west of the Copper River, allow for an expansion of

winter heli-skiing opportunities. Alternatives recommending Wilderness designations on the Copper River Delta would significantly restrict helicopter access opportunities.

Summer motorized recreation opportunities are almost the opposite of winter. Currently almost all lands within the Chugach National Forest and all lands adjacent to the Forest are either closed to surface motorized uses (OHVs) either because of special designation, written closures or are unavailable for use due to the nature of the terrain. Alternatives that would allow for surface motorized uses within the Forest would increase recreation opportunities for off-road activities in Southcentral Alaska. Alternatives A, B and the No Action would increase surface motorized opportunities in Southcentral Alaska. Alternatives A, B, C, No Action, and the Preferred would increase or maintain status quo for summer helicopter access in Southcentral Alaska.

Summer helicopter activities, such as heli-hiking, are also restricted on many lands adjacent to the Chugach National Forest. Chugach State Park, Kenai Fjords National Park, Wrangell-St. Elias National Park, and Wilderness within the Kenai National Wildlife Refuge are all closed to helicopter access. Alternatives that allow for helicopter access would provide for summer heli-hiking opportunities.

Appendix F displays how motorized access (highway vehicles, high clearance vehicles, off road vehicles, motorcycles, and snowmachines) and nonmotorized access (horses, hikers, skiers, bicycles, and dog sleds) would be managed under each alternative.



Subsistence

Introduction

Subsistence hunting, fishing, trapping and gathering activities on the Chugach National Forest represent a major focus of life for many Southcentral Alaska residents. Some individuals participate in subsistence activities to supplement personal income and provide needed food. Others pursue subsistence activities to perpetuate cultural customs or traditions. Still others participate in activities for reasons unconnected with income or tradition. For all of these individuals, subsistence is a lifestyle reflecting deeply held attitudes, values and beliefs.

Legal and Administrative Framework

- **Alaska National Interest Lands Conservation Act (ANILCA) of 1980** - Title VIII of ANILCA provides for the continuation of customary and traditional uses of fish and wildlife resources on public lands by residents of rural Alaska. This must be consistent with sound management principles and the conservation of healthy fish and wildlife populations. Section 803 defines subsistence as, “the customary and traditional uses by rural Alaska residents of wild renewable resources for direct, personal or family consumption as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of non-edible by products of fish and wildlife resources taken for personal or family consumption; barter, or sharing for personal or family consumption; and for customary trade.”

ANILCA provides for continuation of the opportunity for subsistence by rural residents of Alaska, including Natives and non-Natives, on the public lands.” It also states, in part, that “customary and traditional” subsistence uses shall be the priority consumptive uses of all such resources on public lands. This must be consistent with sound management principles and the conservation of healthy fish and wildlife populations. Section 810 requires the Forest Service to determine whether actions will impact subsistence uses.

Key Indicators

- Habitat capability and management intensity that would affect species important to subsistence
- Acres of habitat where traditional access is not limited
- Miles of new road construction
- Number of backcountry sites

Resource Protection Measures

All areas on the Chugach National Forest are available for harvest of wild resources for subsistence purposes regardless of the management prescription, except for small areas that might be restricted due to safety concerns such as active mines or developed recreation sites. Title VIII of ANILCA clearly states that Alaska rural residents have priority for uses of these resources. Resource protection measures are in place to protect the key subsistence based species. The implementation of Forestwide standards and guidelines, Best Management Practices (BMPs), and minerals leasing stipulations, all contribute to the resource protection measures for fish and wildlife. These protection measures apply to all alternatives. Once an alternative has been selected and implementation starts, monitoring will be initiated to determine if the appropriate protection measures have been implemented and if the measures are adequate. Changes in either the method of implementation or the protection measure will occur if either does not adequately protect subsistence resources or productivity.

Section 810 of ANILCA requires a federal agency, having jurisdiction over lands in Alaska, to evaluate the potential effects of the proposed land use activities on subsistence uses and needs, followed by a specific determination whether there will be a significant possibility of a significant restriction of subsistence uses. A significant possibility of a significant restriction is defined as when a proposed action has an expected outcome where a substantial reduction in the opportunity to continue subsistence uses of renewable resources occurs. Based on this analysis it is determined that in combination with past, present, and reasonably foreseeable future actions, none of the alternatives, if implemented through the project implementation stage, may result in a significant possibility of a significant restriction of subsistence uses of a wild resource due to the potential effects on abundance and distribution of fish and wildlife, limits to access, or increases of competition. Competition may increase as long as Alaska rural population grows and additional access is created for non-rural users to access the subsistence resources. These factors may cause a need for federal subsistence regulatory changes to protect subsistence uses.

Affected Environment

Forestwide

Who Subsistence Users Are

The communities in or adjacent to the Chugach National Forest that are currently determined to be rural are the communities of Hope, Cooper Landing, Whittier, Chenega Bay, Tatitlek, and Cordova. The first three communities are located in the northern end of the Kenai Peninsula. This region of the Kenai Peninsula is habitat for moose, black bear, brown bear, mountain goat, and Dall sheep. Caribou were reintroduced to the area by the Alaska Department of Fish and Game in 1965. Furbearers, such as wolves, coyote, lynx, mink, river otters, wolverine, hares, and beaver are common. A variety of anadromous fishes are present, including chinook, chum, coho, pink and sockeye salmon, which spawn

in abundance around these local communities. Birds such as sandhill cranes, ptarmigan, grouse, ducks, and eagles are also found in the area.

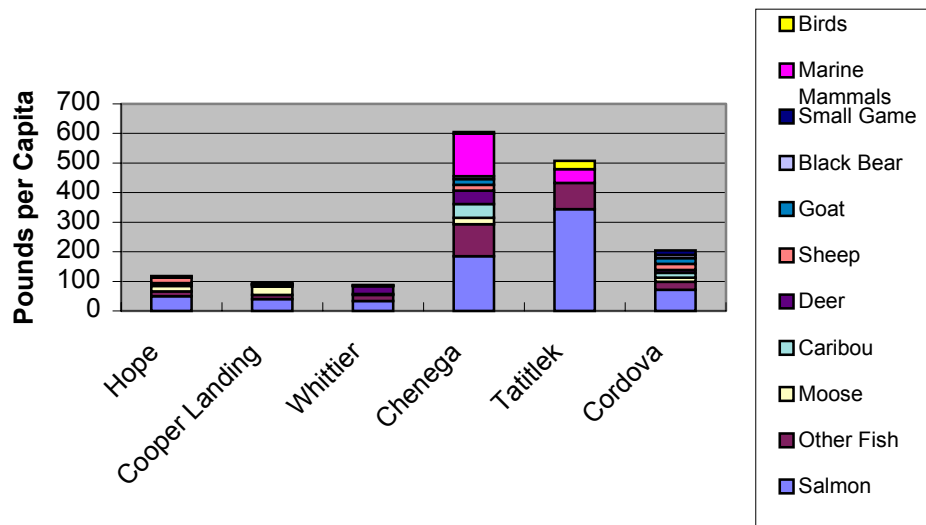
The communities of Whittier, Chenega, Tatitlek, and Cordova lie in the ice-free areas of Prince William Sound. In addition to the upland and freshwater habitat resources found on the Kenai Peninsula, deer are also found along the coastlines and the islands of Prince William Sound. For residents of Prince William Sound caribou and Dall sheep are not available on the Copper River Delta or Prince William Sound. The area also contains saltwater wetlands and tidal flats, in addition to the extensive marine waters. These saltwater resources support a variety of saltwater resources, such as bottom fish, crab, scrimp, clams and other varieties of marine invertebrates.

Particularly in Prince William Sound, where the economy is highly seasonal and resource based, subsistence harvest of fish and wildlife resources takes on much importance. The use of these resources may play a major role in supplementing cash incomes during periods when opportunity to participate in the wage economy is either marginal or nonexistent. Due to the high prices of commercial products, especially in remote communities, the economic role of locally available fish and wildlife takes on added importance.

The subsistence resource inventories are available for all six rural communities that use the Chugach for subsistence activities. Collectively, these communities hunted, fished and collected plants and marine invertebrates throughout virtually the entire Forest. Subsistence resource information is available for Chenega Bay (1984, 85, 89, 90, 91, 92, 93), Tatitlek (1993), Cordova (1985, 1988, 1991, 1993), Whittier (1990), Hope (1990), and Cooper Landing (1990). Of the six communities considered, the predominantly Native villages of Chenega Bay and Tatitlek rely upon the Forest the most, averaging 605 and 507 pounds per person of wild resources for home use in the early 1990s. This is typical of isolated rural, subsistence-dependent coastal or interior communities. In 1993, Cordova residents harvested an average of 204 pounds per person, similar to southeast Alaska rural communities, which average about 210 pounds per capita. Hope, Cooper Landing and Whittier harvested 111, 92 and 80 pounds per person respectively. By comparison non-rural areas such as Anchorage, Matanuska-Susitna Borough, and the Kenai Borough average 48 pounds per person. The average number of resources used per household per year ranged from 19 in Tatitlek and Chenega Bay to 8 in Whittier and Cooper Landing.

Figure 3-64 summarizes the use patterns and amounts for the six rural communities known to use the Chugach National Forest for subsistence purposes. Included are wild resources that are found on the Chugach. The six communities are variable in the variety and amount of harvests, though all show a harvest predominance of fish, particularly salmon.

Figure 3-64: Subsistence use by six rural communities in or adjacent to the Chugach National Forest.



Source: Seitz and Fall 1992, Fall and Uttermohle 1995.

Subsistence Use Pattern

The following is a general area description for rural community subsistence use by key subsistence resource. A more detailed description can be found depicted within the Chugach National Forest subsistence use area maps.

Salmon

Whittier residents reported harvesting salmon along Passage Canal and around Knight, Naked and Montague Islands. Tatitlek residents indicated using an area bounded by Port Fidalgo to the east, Jack Bay to the north, and Glacier Island to the west. Chenega Bay people (in the mid-1980s) got salmon at Evans, Green, Montague, Chenega, and Latouche islands, Knight Island Passage, Whale Bay, Jackpot Bay, Eshamy and the Tatitlek/Bligh Island area. Cordova residents obtained salmon from the Copper River Flats, Eyak and Alaganik rivers, Orca Inlet, Simpson Bay, and McKinley Lake. Other non-specified areas likely were also used. Hope and Cooper Landing residents obtained salmon primarily from the Kanai River, Russian River, Sixmile Creek, and Resurrection Creek.

Deer

Deer harvests occurred mainly on the islands throughout Prince William Sound: Chenega, Knight, Hawkins, Hinchinbrook, Montague, Esther, Evans, Latouche, Green and Elrington Islands. Cooper Landing residents reported deer hunting on Knight Island and Montague Island.

Moose

Hope and Cooper Landing residents reported hunting moose in the Bear Valley and Placer River drainage, as well as most other drainages along the major

stream valleys on the Northeastern Kenai Peninsula. Whittier residents said they hunted moose in Kings Bay and Port Nellie Juan. Cordovans hunted moose around the Martin River, the western Copper River Delta, and the Bering River.

Mountain Goats

Whittier residents reported hunting mountain goats in non-specified areas of northern Prince William Sound, and Cordova residents mentioned hunting at St. Matthews Bay, McKinley Peak, Port Fidalgo, and Port Bainbridge. Cooper Landing and Hope residents hunt mountain goats along the eastern flank of the Kenai Peninsula. Tatitlek residents hunt goats primarily in Ports Gravina and Fidalgo, Valdez Arm, and Long Bay. Chenega Bay residents harvest goats primarily in Port Bainbridge.

Black Bears

Black bears were hunted by residents of Whittier in Port Wells and College Fiord, while Tatitlek hunters used the northern half of the Sound including the northern portion of Esther Island. Chenega Bay residents hunted black bear on Evans, Knight and (to a lesser extent) Bainbridge Islands. Cordova hunters used the Copper River road system, and Port Gravina. Hope and Cooper Landing people hunt within most of the valley areas on the Kenai Peninsula.

Birds

Birds were hunted by Whittier residents at Green, Culross, and Perry Islands and the northwest side of Montague Island. Chenega Bay hunters went to Latouche, Squire, Elrington and Knight islands as well as Sawmill Bay and around Evans Island to hunt birds. Cordova residents hunted waterfowl at Alaganik Slough, Boswell Bay, the Copper River Delta and Flats, Controller Bay, the Eyak River, Hawkins, Wingham and Hinchinbrook Islands, and Simpson Bay. Hope and Cooper Landing residents have harvested birds from most areas on the Chugach portion of the Kenai Peninsula.

Marine Mammals

Tatitlek residents described their marine mammal hunting area as spanning the northern half of the sound as far west as Port Wells and around Esther and Perry Islands. Chenega Bay residents indicated a large part of the western Sound and, to a lesser extent, also in the eastern Sound, with their highest use area being within a 6- to 12-mile radius from the village. Other locations that Chenega Bay residents mentioned were Knight Island Passage, Chenega Island and the outer shoreline of Main Bay/Eshamy Bay area and points north, west and east.

Marine Invertebrates

Most of Prince William Sound was used for harvesting marine invertebrates. Whittier residents used the eastern portion of Prince William Sound. Chenega Bay residents obtained marine invertebrates in Port Wells and Culross Passage as well as these islands: Chenega, Green, Hawkins, Eleanor, Knight, Squire, Montague, Latouche, Elrington, Bainbridge and Evans. Cordovans harvested crab from Orca Inlet and Orca Bay, Simpson Bay, Gravina Bay, and the Copper River Flats, shrimp from Port Wells, Simpson, Eshamy and Unakwik Bays, and near Naked Island, and they got clams from the Copper River Delta and

Controller Bay, the Copper River Flats, Montague Island, Canoe Pass and Simpson Bay.

Environmental Consequences

Effects of alternatives on subsistence resources and use on the six rural communities in and adjacent to the Forest are presented here. The Forestwide evaluation is presented based on general considerations in the three categories of effects previously identified: abundance and distribution of fish wildlife, and other wild resources, maintenance of access to these resources, and increases in competition by non-rural users competition. The analysis relies on the Forestwide effects analyses from the related resource sections (primarily Aquatic Ecosystems and Essential Fish Habitat and Forested Vegetation) where abundance and distribution are an issue.

Section 810 of ANILCA requires the Forest Service, in determining whether to withdraw, reserve, lease, or otherwise permit the use, occupancy, or disposition of national forest lands in Alaska, to evaluate the potential effects on subsistence uses and needs, followed by specific notice and determination procedures should there be a significant possibility of a significant restriction of subsistence uses. The Alaska Land Use Council's definition of "significantly restrict subsistence use" is one guideline used in the evaluation: "A proposed action shall be considered to significantly restrict subsistence uses, if after any modification warranted by consideration of alternatives, conditions, or stipulations, it can be expected to result in a substantial reduction in the opportunity to continue subsistence uses of renewable resources." Considerations of abundance and distribution, access, and competition (by non-rural residents) are mentioned. The U.S. District Court Decision of Record in *Kunaknana v. Watt* provided additional clarification. In part it states: "restrictions for subsistence uses would be significant if there were large reductions in abundance or major redistribution of these resources, substantial interference with harvestable access to active subsistence-use sites or major increases in non-rural resident hunting."

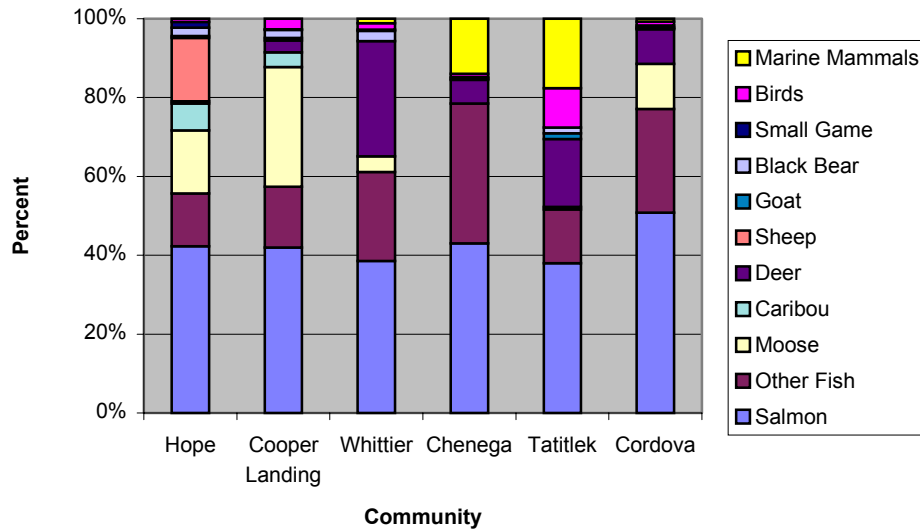
Direct and Indirect Effects

Abundance and Distribution

Figure 3-65 shows the percentage of wildlife resources for each of the six rural communities. Fish are the primary subsistence resource. Use ranges from 56 percent in Tatitlek to 79 percent (by weight) at Chenega Bay. Salmon account for the bulk of the fish resource, accounting for 40 to 50 percent of the total resources used. Of the large land mammals used, deer and moose are primary species. Deer harvest which accounts for 10 percent of all use by the six communities, ranges from 1 percent in Hope to 29 percent in Whittier. Moose

account for 7 percent of the total use, ranging from no reported use in Chenega Bay and Tatitlek to 30 percent in Cooper Landing.

Figure 3-65: Percentage use of wild resources by community.



Source: Seitz and Fall 1992, Fall and Uttermohle 1995.

Effects of Alternatives on the subsistence opportunities were evaluated using a two-step coarse filter/fine filter approach. The methodology uses a matrix that defines all possible combinations of habitat conditions and management activities that affect the subsistence use. The coarse filter evaluation compares the overall habitat value of areas used for subsistence to the management intensity prescribed for each of the planning units. Habitat was assigned a high, medium, or low ranking based on habitat suitability effectiveness modeling, discussed within the Wildlife section. Management intensity was defined as low for Category 1 and 2 prescriptions, medium for Category 3 and 4 prescriptions, and high for Category 5 prescriptions. Table 3-58 summarizes the outcome. Comparisons are made in terms of acreage and percentages.

Table 3-58: Coarse filter comparison of habitat effectiveness to management intensity.

		Area Used For Subsistence Management Intensity (Acres)				Percent Total Acres			
		Hi	Med	Lo	SUBTOTAL	Hi	Med	Lo	SUBTOTAL
No Action									
Overall	Hi	2,410	561,610	342,920	906,940	0.09	22.01	13.44	35.55
Habitat	Med	6,650	641,720	673,260	1,321,630	0.26	25.15	26.39	51.80
Effectiveness	Lo	3,110	175,910	143,780	322,800	0.12	6.89	5.64	12.65
Total		12,170	1,379,240	1,159,960	2,551,370	0.48	54.06	45.46	100.00
Preferred Alternative									
Overall	Hi	2,410	108,260	796,270	906,940	0.09	4.24	31.21	35.55
Habitat	Med	6,650	90,140	1,224,840	1,321,630	0.26	3.53	48.01	51.80
Effectiveness	Lo	3,110	27,160	292,530	322,800	0.12	1.06	11.47	12.65
Total		12,170	225,560	2,313,640	2,551,370	0.48	8.84	90.68	100.00
Alternative A									
Overall	Hi	2,410	618,790	285,740	906,940	0.09	24.25	11.20	35.55
Habitat	Med	6,650	954,700	360,280	1,321,630	0.26	37.42	14.12	51.80
Effectiveness	Lo	3,110	230,880	88,810	322,800	0.12	9.05	3.48	12.65
Total		12,170	1,804,370	734,830	2,551,370	0.48	70.72	28.80	100.00
Alternative B									
Overall	Hi	2,410	395,230	509,300	906,940	0.09	15.49	19.96	35.55
Habitat	Med	6,650	556,220	758,760	1,321,630	0.26	21.80	29.74	51.80
Effectiveness	Lo	3,110	137,580	182,110	322,800	0.12	5.39	7.14	12.65
Total		12,170	1,089,030	1,450,170	2,551,370	0.48	42.68	56.84	100.00
Alternative C									
Overall	Hi	2,410	102,580	801,950	906,940	0.09	4.02	31.43	35.55
Habitat	Med	6,650	114,820	1,200,160	1,321,630	0.26	4.50	47.04	51.80
Effectiveness	Lo	3,110	33,240	286,450	322,800	0.12	1.30	11.23	12.65
Total		12,170	250,640	2,288,560	2,551,370	0.48	9.82	89.70	100.00
Alternative D									
Overall	Hi	2,410	38,320	866,210	906,940	0.09	1.50	33.95	35.55
Habitat	Med	6,650	41,040	1,273,940	1,321,630	0.26	1.61	49.93	51.80
Effectiveness	Lo	3,110	13,710	305,980	322,800	0.12	0.54	11.99	12.65
Total		12,170	93,070	2,446,130	2,551,370	0.48	3.65	95.88	100.00
Alternative E									
Overall	Hi	2,410	5,160	899,370	906,940	0.09	0.20	35.25	35.55
Habitat	Med	6,650	7,800	1,307,180	1,321,630	0.26	0.31	51.23	51.80
Effectiveness	Lo	3,110	1,750	317,940	322,800	0.12	0.07	12.46	12.65
Total		12,170	14,710	2,524,490	2,551,370	0.48	0.58	98.95	100.00
Alternative F									
Overall	Hi	2,410	6,140	898,390	906,940	0.09	0.24	35.21	35.55
Habitat	Med	6,650	12,410	1,302,570	1,321,630	0.26	0.49	51.05	51.80
Effectiveness	Lo	3,110	4,910	314,780	322,800	0.12	0.19	12.34	12.65
Total		12,170	23,460	2,515,740	2,551,370	0.48	0.92	98.60	100.00

The outcome of the coarse filter analysis is discussed below. Of the 2.5 million acres used for subsistence, 900,000 acres (35 percent) are in the high habitat effectiveness category, 1,300,000 acres (52 percent) are moderate, and 320,000 acres (13 percent) are low value. The alternatives fall into three general ranges. Alternatives C, Preferred, D, E, and F have 90, 91, 96, 99, and 99 percent of subsistence use areas in low management intensity prescriptions, respectively.

The No Action and Alternative C have about 45 and 57 percent, respectively. Alternative A has 29 percent in low management intensity prescriptions.

Alternatives C, Preferred, D, E, and F have 90 percent or more of the suitable subsistence use area in low management intensity planning units. These alternatives are not analyzed further because they are determined to have no significant possibility of having a significant restriction on subsistence use.

A fine filter analysis is used to determine the potential effect of management activities on subsistence uses within areas where moderate management intensities are prescribed. Abundance and distribution of deer, moose, and fish and personal use wood products such as firewood are the resources used by rural residents that could respond to the varying alternatives. The primary subsistence resource experiencing potential downward trend in population from management activities is Sitka black-tailed deer. These effects are tied to harvest of old-growth closed canopy forest in Alternatives A, the No Action Alternative, and Alternative B. The areas for potential timber harvest in the Outside Montague watershed association lie within the hunting areas for the communities of Cordova and Cooper Landing (Fall and Uttermohle 1995, Seitz and Fall 1992). Deer are assumed to be an “indicator” for potential subsistence resource consequences concerning the abundance and distribution of the wildlife, due to the association of Sitka black-tailed deer with old-growth forest habitat.

Analysis of the deer hunting patterns from ADF&G Profile Database studies indicate that the Outside Montague and the McKinley Lake Watershed Associations are areas where deer harvest activities and potential timber harvest intersect. Cordova and Cooper Landing residents are the rural residents who reported hunting within the areas. Table 3-59 depicts high value deer habitat within Prince William Sound And Montague Island. The No Action, Alternative A, and Alternative B proposed timber harvest acreage and are included for analysis. All timber harvest acreage is assumed to be high value habitat deer habitat.

Table 3-59: Percentage of high value deer habitat harvested by alternative.

Effective Deer Habitat	High Value Acres	% of High PWS Value Deer Habitat	% of Montague Is High Value Deer Habitat
Montague Outside	13,760	3	37
No Action 1 st decade harvest	2,090	0.4	6
Alt A 1 st decade harvest	3,250	0.7	8
Alt B 1 st decade harvest	1,940	0.4	5
Montague Inside-Green Island	23,430	5	63
Total Montague	37,190	8	not applicable
Total Prince William Sound	456,420	100	not applicable

Source: Chugach National Forest GIS corporate database.

Montague Island represents about 8 percent of the total high value deer habitat in Prince William Sound, while the Outside Montague Island watershed association is 3 percent of the total. Alternatives No Action, Alternative B, and

Alternative A harvests are 0.7, 0.7, and 0.4 percent of the total high value deer habitat with Prince William Sound, respectively. The percentage of high value deer habitat harvested on Montague Island is 6, 8, and 5 percent, respectively, for the No Action, Alternative A, and Alternative B. Timber harvest on these very small percentages of the total high value deer habitat is assumed to be not significant.

Moose are an important subsistence species on the Kenai Peninsula and Copper River Delta. Moose comprise the largest percentage of land mammals harvested by the communities of Hope, Cooper Landing, and Cordova. Moose numbers on the Kenai Peninsula have decreased from 15,000 in 1970 to 8,000 in 2000 (Lottsfeldt-Frost 2000). Moose habitat indices indicate that there would be a slight decrease in moose habitat capability as vegetation succession moves toward closed needle leaf forest stands on the Kenai Peninsula. There would be 30 percent less broadleaf forest acreage, resulting in a slight downward decrease in moose carrying capacity. Alternatives A, B, C, No Action, and the Preferred propose burning 2,248 acres and mechanically treating 384 acres per year to promote early successional stage vegetation important for moose winter habitat. Alternative D proposes burning 1,558 acres and mechanically treating 236 acres per year. Alternatives E and F propose 910 and 920 acres of prescribed burns, and 137 and 140 acres of mechanical treatments per year, respectively.

Moose are also found on the Cooper River Delta. Successional pathways on the Copper River Delta indicate that the overall vegetation composition on the Copper River Delta would remain in balance and moose carrying capacity would remain steady.

All other wildlife populations used by subsistence hunters are estimated to have a steady or slightly increasing trend.

Effects to fish habitat may also result from land management activities, but the magnitude of the effects cannot be calculated, and are determined to be minimal with application of Aquatic Ecosystem standards and guidelines and Best Management Practices. Based on the amount of stream miles that fall within low management intensity Category 1 and 2 prescriptions resulted in the following order of increasing risk: Alternatives F, E, D, Preferred, C, B, No Action, and A.

Fish habitat and riparian habitat restoration activities are permitted in varying degree by all alternatives. Fish enhancement projects benefit subsistence users through increased numbers of fish within subsistence use areas. Alternatives response to the subsistence situation can be also ranked on number miles and acres of anadromous fish habitat improvement. Some projects are specifically directed toward subsistence users. All alternatives, except for F, propose 1,722 acres of anadromous fish habitat enhancement and 82 miles of stream improvement. Alternative F proposes 414 acres and 82 miles of improvement.

Subsistence Access

Access to subsistence hunting and fishing areas on the Chugach would not be impacted by any alternatives. Historical access has been primarily by foot, boat, and floatplane, and is available in all the alternatives for present and the

foreseeable future activities. The Preferred Alternative would have one area, Power Creek (11,750 acres), northeast of Cordova, where motorized access for subsistence purposes would not be permitted. Alternative C, E, and F propose two planning areas with a total of 22,790 acres where motorized access for subsistence purposes would not be permitted. Alternative D proposes expanding these areas to 91,580 acres. The alternatives are determined not to have a significant restriction in subsistence access. The rationale is these two areas have low capability for summer motorized use due to environmental factors such as numerous wetlands alternating with heavily forested floodplains and mountain slopes. The areas are also unsuitable for winter snowmobile use due to steep topography and avalanche hazards.

As a result of new road construction, new use patterns are likely to develop around some communities. Some rural residents view this as a positive development. Some rural residents may view it as a negative development. All alternatives would have some new road construction. Table 3-60 shows the new road construction for the first decade.

Table 3-60: Miles of road, end of first decade.

	Alternative							
	No Action	Preferred	A	B	C	D	E	F
Miles of Road Construction	67	33	114	100	29	22	16	13
Total Miles Available	170	129	217	232	139	119	113	110

Competition

Competition for subsistence resources is a result of factors such as fish and game regulations, mobility, the natural distribution of fish and game species across the Chugach, decreases in resource populations as a result of habitat reductions, decreases in resource populations as a result of over-harvest, and access provided to rural communities in the form of roads, ferries, and commercial air carriers. The majority of the population (Anchorage) surrounding the Chugach is non-rural. Competition for the more abundant wildlife and fisheries resources near rural communities results from the combination of these factors. For analyzing competition, the following assumptions are made:

1. New road construction adjacent to communities with ferry access will result in increased competition from outside communities.
2. New road construction adjacent to existing road systems where interties between communities exist will result in increased competition from surrounding communities associated with the inter-connected roads.

3. Large group development sites will increase competition for resources used by rural residents. Development may also displace users from traditionally used sites.

Alternatives A, B and the No Action are the only alternative that have a significant gain in road mileage during the first decade. Alternative A has 41 miles of interconnected road. Alternative B has 21 miles of interconnected road. The No Action Alternative has 13 miles. If this small number of additional miles caused excess competition, restriction by regulating road use to meet subsistence needs could be effected.

Developed recreation sites where groups of people concentrate may cause displacement from traditionally used hunting and fishing subsistence areas. Community leaders from the rural villages of Tatitlek and Chenega Bay have expressed concern about backcountry group site potential disruption of subsistence activities from areas they have traditionally used in Prince William Sound. McClure Bay, Coghill Point, Long Bay, Miners Bay, and Port Fidalgo are the areas of their greatest concern. The alternatives differ in numbers of proposed backcountry group sites within Prince William Sound and the Copper River. The following table (Table 3-61) reflects the number of the two Backcountry Group group sites per alternative.

Table 3-61: Backcountry Groups facilities by alternative.

Facility Type	Alternative							
	No Action	Preferred	A ¹	B ¹	C	D	E	F
Developed	N/A	2	N/A	N/A	20	0	3	0
Limited or No Facilities	N/A	0	N/A	N/A	22	0	0	0
Total	N/A	2	N/A	N/A	42	0	3	0

¹ N/A = Not Available. These alternatives contain prescriptions that allow lodges within all suitable areas.

The impact of the proposed sites would vary depending on the season of use of the facilities and the number of trips made to the sites. Alternatives with the most Backcountry Group sites have potential to impact subsistence activities. Impacts to subsistence activities could be mitigated by developing facility season of use around the subsistence harvest seasonal rounds within the areas. Alternatives A, B, and No Action have prescriptions which emphasize lodges and other commercial enterprises. These alternatives would likely increase competition above the level resulting from the implementation of the other alternatives.

Given the small amount of development in any of the alternatives, all alternatives do not have a significant possibility of a significant restriction of subsistence use by increasing competition for some subsistence resources.

Cumulative Effects

Effects Resulting from Past Actions

Exxon Valdez Oil Spill

The *Exxon Valdez* oil spill impacted subsistence uses and patterns over the last 10 years. Subsistence uses dropped after the oil spill, and still have not returned

to normal. Concern over hydrocarbon contamination, particularly on marine resources has caused concern. This may create displaced uses on terrestrial resources, creating a greater need for land mammals and fish. This could increase hunting and fishing demands on National Forest System lands.

Native corporation harvest operations over the last 15 years have harvested large blocks of timber adjacent to National Forest System lands. Harvest has been primarily on Montague Island, the Knowles Head area, and the area between Scott River and Sheridan River. The harvest on Native corporation lands is anticipated to continue, but at a very low level over the next decade. The resulting lower deer habitat capabilities on these private lands, particularly in Prince William Sound, could increase hunting demands in adjacent National Forest System areas, increasing competition and potentially leading to reduced hunter success, and reduced or eliminated sport seasons.

Effects Resulting from Present Actions

Whittier Road

The Whittier Road could have cumulative effects on subsistence activities. The projected increase in recreational sport hunting and fishing days is expected to greatly increase. The Whittier Road Environmental Impact Statement predicted sport fishing increases upwards to 760 percent over present conditions near Whittier. The increases in sport fishing around Chenega were predicted to be much less, around 33 percent. These increases were determined to not create a significant restriction to subsistence activities in this same EIS, due to the growth in production of hatchery fish (USDOT 1995).

Harvest of deer within the Prince William Sound is also predicted to increase, though much less rapidly. These increases ranged from 10 to 100 percent on Perry Island. The closer to Whittier the larger the increase in predicted deer harvest numbers. Because of the projected increase in demand, the number of deer may be insufficient to meet demands in the future. The result is an increase in predicted harvest of deer harvest above the deer harvest objectives established for Prince William Sound, and possible restriction on deer harvest. As Forest Service management activities will not have an impact on the carrying capacity of these areas, it may be possible to minimize this restriction by regulating non-subsistence uses in areas most heavily used by rural residents for deer harvests. The implementation of Alternatives A, B and the No Action may reduce deer numbers slightly on Montague Island, however the overall effect would not result in a substantial cumulative effect on wildlife.

Findings

Based on the above analysis and considering all relevant information in this analysis, the impact of the proposed action combined with the reasonably foreseeable future activities, and activities planned on adjacent lands, would not significantly restrict subsistence use of wild resources within the Chugach National Forest.

Research Natural Areas

Introduction

Research Natural Areas (RNAs) are selected from relatively undisturbed areas to represent the spectrum of natural ecosystems and special or unique characteristics of scientific importance. RNAs are managed for the purposes of maintaining biological diversity, conducting non-manipulative research and monitoring, and fostering education. Because they are managed in a natural state, RNAs serve as controls for evaluating long-term effects and ecological change on managed areas. By encompassing a wide range of habitats, RNAs provide habitat for little known or unknown forms of biological diversity, including insects, fungi, and soil organisms. In short, RNAs function as biological repositories, safeguarding habitats, species, and natural processes for the future.

Legal and Administrative Framework

- Planning regulations (**36 CFR 219.25**) state that forest planning shall provide for the establishment of Research Natural Areas. Planning shall make provision for the identification of examples of important forest, shrubland, grassland, alpine, aquatic, and geologic types that have special or unique characteristics of scientific interest and importance and that are needed to complete the national network of RNAs.
- On July 19, 1993, the Chief of the Forest Service issued a national strategy for recognizing the expanding role of RNAs in ecosystem management. An important part of this strategy was to delegate authority to the Regional Forester to designate RNAs.
- RNA selection procedures focus on fulfilling RNA objectives, which can be found in section 4063.03 of the **Forest Service Manual**. The Alaska Region developed a supplement to the Forest Service Manual (supplement no. 4000-93-1) that identifies the primary objectives for use of RNAs within the Region. Additionally, section 4063.2 of the Alaska Region supplement specifies processes to be used to select areas on National Forest System lands within Alaska.

Key Indicators

The following key indicator was identified for summarizing success of the RNA network in meeting representativeness objectives:

- Number and acres of proposed and existing RNAs

Resource Protection Measures

RNA management focuses on allowing natural conditions to prevail, usually by eliminating or limiting human intervention (USDA Forest Service 1992b). Prescribed management actions may be used to restore processes. For example, RNAs prone to natural fires, but where humans have prevented fire occurrence, may need to be managed with prescribed fire. Activities that are almost never appropriate in RNAs include (S. Greene personal communication):

- herbicide, pesticide or nutrient application;
- removal of groups of trees;
- introduction of off-site species; and,
- impoundments or diversions of streams.

Affected Environment

The 1984 Forest Plan proposed nine areas as RNAs (totaling 71,100 acres). Of these, only the 2,500-acre Green Island RNA has been designated. While the nine areas proposed include important features of diversity, a disproportionate number (5 of 9) represent glacial features. Moreover, only one area focuses on wetlands. High biomass forests, aquatic features, and alpine tundra appear inadequately represented as well (Juday 1981).

Additional deficiencies were also found by an analysis (Juday 1981) of how well the nine areas meet ecological feature types. The set of a range of proposed RNAs represents 36 of 69 feature types (52 percent). Deficiencies were also found in how well the proposed RNA network and recommended Wilderness from the 1984 Forest Plan encompasses the range of bioclimatic types (DeVelice and Hagenstein 1995). The proposed RNAs and recommended Wilderness adequately represent only 26 and 34 percent of the bioclimatic classes, respectively.

The Forestwide representativeness analysis was conducted to resolve these deficiencies (DeVelice 1999). Based on this analysis, a network of eight proposed RNAs (including Green Island) were selected for alternative analysis for the Revised Forest Plan. Figure 3-66, on the next page, displays the location of the seven proposed RNAs plus Green Island RNA.

Figure 3-67 (from DeVelice 1999) displays the bioenvironmental class representation within the proposed network of eight RNAs sorted by the Forestwide total area of each bioenvironmental class. As can be seen, the bioenvironmental classes with the least total area are most poorly represented in the proposed network (0 out of 14 classes). In contrast, the bioenvironmental classes with the greatest total area are 75 percent represented (3 out of 4 classes) within the proposed network.

Figure 3-66: Location of the eight eligible RNAs, including the existing Green Island RNA within the Chugach National Forest.

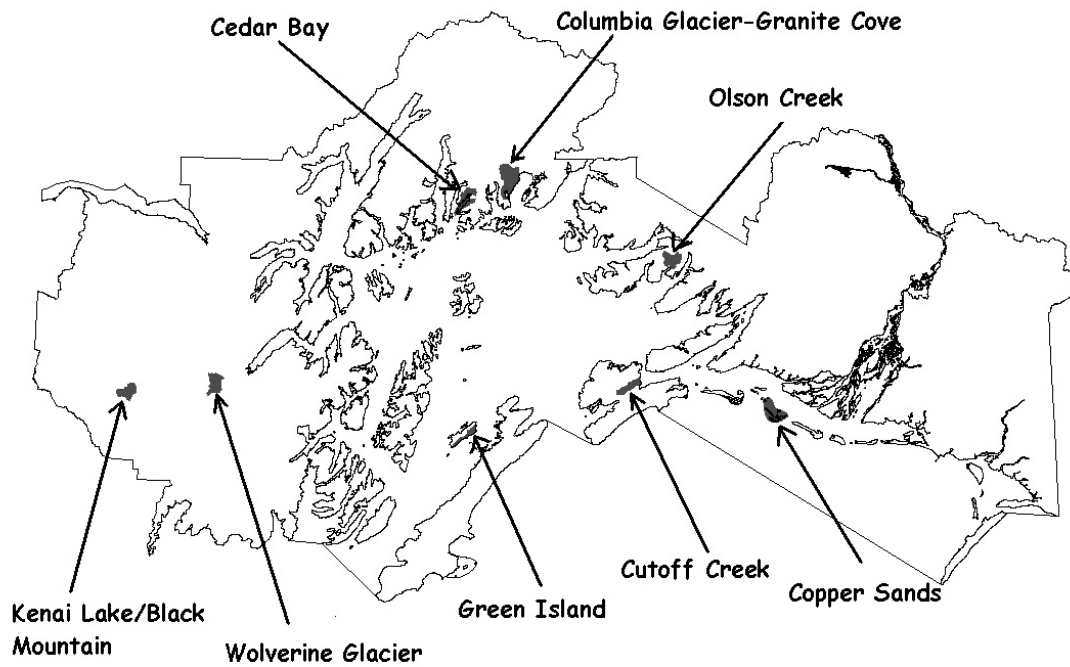
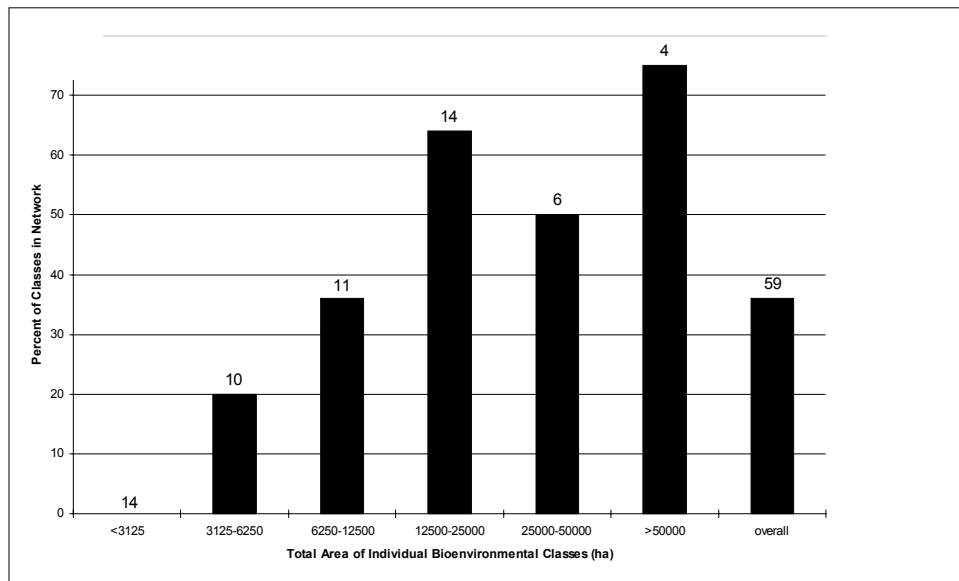


Figure 3-67: Bioenvironmental class representation within the eligible network of eight RNAs sorted by total area of each bioenvironmental class.¹



¹ The number above each bar represents the number of bioenvironmental classes within that total area class (59 bioenvironmental classes overall).

Environmental Consequences

General Effects

The Preferred Alternative recommends four new RNAs: Copper Sands, Kenai Lake/Black Mountain, Wolverine Glacier, and Olsen Creek. Including the 2,500-acre designated Green Mountain RNA, they total 21,500 acres. Characteristics of each of the four recommended RNAs include the following: 1) the Copper Sands area is a barrier island (including breakwater sandbars). It is a site of active vegetation succession on sand dunes; 2) the Kenai Lake/Black Mountain area contains representations of many of the vegetation type and biophysical combinations present within the mountainous interior portion of the Kenai Peninsula; 3) the Wolverine Glacier area represents a mid-elevation glacier with a limited gathering area. A diversity of forest and tundra plant communities is also present; and, 4) the Olsen Creek area has been the site of extensive non-manipulative fisheries (anadromous species) research and also contains a wide diversity of vegetation types and landforms.

The No Action Alternative includes the nine areas from the 1984 Forest Plan for 71,100 acres. Alternative A includes only the designated Green Island RNA. In addition to the 2,500-acre Green Island RNA, Alternative B proposes three new RNAs totaling 20,900 acres, Alternative C proposes four new RNAs totaling 32,400 acres, Alternative E proposes six new RNAs totaling 41,700 acres, and

Alternative D and F propose seven new areas totaling 46,600 acres. Table 3-62 summarizes acreage of proposed RNAs by alternative.

Table 3-62: Acreage of designated (Green Island) and eligible RNAs by alternative (acres rounded to hundreds).

Area	Ecological Subsection	Alternative							
		NA	Preferred	A	B	C	D	E	F
Green Island	PWS ¹ Islands	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
Columbia Glacier-Granite Cove	Chugach Icefields	12,300		.	.	.	12,300	12,300	12,300
Copper Sands	Copper River Delta	1,500	1,500	.	.	1,500	1,500	1,500	1,500
Kenai Lake/Black Mountain	Kenai Fjordlands	3,800	3,800	.	6,000	6,000	6,000	6,000	6,000
Wolverine Glacier	Chugach Icefields	7,000	7,000	.	.	.	7,000	7,000	7,000
Cedar Bay	PWS ¹ Mainland	.	.	.	5,700	5,700	5,700	5,700	5,700
Cutoff Creek	PWS ¹ Islands	.	.	.	.	.	4,900	.	4,900
Olsen Creek	PWS ¹ Mainland	.	6,700	.	6,700	6,700	6,700	6,700	6,700
Blackstone Glacier	Chugach Icefields	4,100		.	.	.	.	.	.
Harvard Glacier	Chugach Icefields	22,000		.	.	.	.	.	.
Pete Dahl Slough	Copper River Delta	9,300		.	.	.	.	.	.
Schwan Glacier Terminus	Chugach Icefields	8,600		.	.	.	.	.	.
Total Acres		71,100	21,500	2,500	20,900	22,400	46,600	41,700	46,600

¹ PWS refers to Prince William Sound.

RNAs are managed to maintain natural (relatively pristine/presettlement) conditions by allowing ecological processes to prevail with minimal human intervention. However, under some circumstances, deliberate manipulation may be utilized to maintain the ecosystem or unique features for which the RNA was established or to re-establish natural ecological processes. Vegetation, habitat, soil productivity, water quality, and ecological processes will be in a natural condition or in as close a natural condition as practicable. Heritage resources are protected by RNA designation since ground-disturbing activities are limited.

A variety of uses are allowed in RNAs as long as the activity or use does not become a threat to the values for which the RNA was proposed.

Direct and Indirect Effects

No activities are allowed within RNAs that could compromise the values for which RNAs are established. The following section focuses on displaying the effects of potential RNA allocations on other activities.

Effects of RNA classification on Heritage Resource Management

If archaeological or other cultural resources exist in any of the proposed RNAs these resources would be given additional protection through RNA designation since ground-disturbing activities are limited.

Effects of RNA classification on Biodiversity Management

RNA management focuses on allowing natural conditions to prevail, usually by eliminating or limiting human intervention. Therefore, the overall effect of RNA designation would be to provide additional protection and maintenance of natural biological diversity.

Effects of RNA classification on Fish Habitat Management

Habitat manipulation for fish is prohibited unless it is specifically needed to restore natural ecosystem conditions. Habitat manipulation is allowed if specifically designed for the protection of threatened, endangered, or sensitive species.

Effects of RNA classification on Fire Management

Of the seven eligible RNAs, only Kenai Lake/Black Mountain has documented occurrences of natural fire. The use of scheduled prescribed fire may be permitted in this area (except where such burning would threaten other values for which the RNA was proposed) to mimic a natural fire regime or to reduce unnatural fuel loads. Fire control techniques will minimize ground disturbance. Natural barriers will be used to confine or contain fire where possible.

Effects of RNA classification on Insects and Disease Management

Natural outbreaks of native insects and disease are allowed to proceed without intervention, unless they are a substantial threat to important resources inside or outside the RNA boundary. Control methods will minimize disturbance. The only known insect or disease problem in any of the proposed RNAs at this time is a spruce bark beetle outbreak affecting the Kenai Lake/Black Mountain area. Whether or not the level of bark beetle activity in the Kenai Lake/Black Mountain area poses a substantial threat to resources inside or outside the RNA boundary is unknown at this time.

Effects of RNA classification on Vegetation Management

Vegetation management manipulation is prohibited, unless it would more closely approximate natural conditions and processes than would be possible otherwise.

Effects of RNA classification on Threatened, Endangered and Sensitive Species Management

Populations of federally listed threatened and endangered species located within any of the proposed RNAs will be protected according to stipulations under the Endangered Species Act and applicable Forestwide standards and guidelines. Sensitive species located within any of the proposed RNAs will be protected by applicable Forestwide standards and guidelines.

Effects of RNA classification on Wildlife Habitat Management

Habitat manipulation for wildlife is generally prohibited unless it is specifically needed to restore natural ecosystem conditions or specifically designed for the protection of threatened, endangered, or sensitive species.

Effects of RNA classification on Lands and Special Uses Management

Permitted special uses including, but not limited to, helicopter landings, fixed-wing flight seeing landings, destination lodge development, and recreational cabin development are not permitted within RNAs. No existing or proposed permitted special use sites occur within any of the eligible RNAs. Historically, special use permits have been issued for helicopter landings in a portion of the Columbia Glacier-Granite Cove eligible RNA. Requests for such permits would be denied in the future if the area becomes established as an RNA since motorized use would not be allowed.

Effects of RNA classification on Utility Corridors/Communication Sites

Utility corridors and communication sites within RNAs are not compatible with RNA objectives and are not allowed. There are no current or planned utility corridors or communication sites within any of the proposed RNAs.

Effects of RNA classification on Recreation/Tourism Management

The Forest Service will not advertise RNAs as destinations for recreation use. However, existing nonmotorized recreation use will be allowed as long as the use does not become a threat to the values for which the RNA was proposed. Current levels of hiking, hunting, fishing, camping, and related low impact uses by the public will be allowed to continue. If resource degradation develops from increased use, the area will be closed to public use until natural ecosystem conditions are restored. Motorized use is not allowed in RNAs.

Effects of RNA classification on Subsistence Management

Nonmotorized subsistence use is allowed within RNAs. If resource degradation develops from increased use, a NEPA and ANILCA Section 810 analysis will be conducted to determine alternatives to eliminate adverse impacts, including, if necessary, closure to subsistence use until natural ecosystem conditions are restored.

Effects of RNA classification on Travel Management

Road construction is prohibited in RNAs. There are no existing or proposed roads or trails within any of the eligible RNAs. Proposed trails have been identified in the Paradise Valley area west of the eligible Wolverine Glacier RNA. It is possible that interest might emerge towards extending such a trail network over the pass above upper Paradise Lake and into the proposed RNA. Such trail construction would not be allowed in the RNA unless it was consistent with the management and research intent for the RNA.

Effects of RNA classification on Facilities Management

Buildings and developed sites are prohibited within RNAs unless they are specifically needed consistent with the management and research intent for the RNA in question. Except for the Wolverine Glacier proposal, there are no known or proposed buildings or structures within any of the eligible RNAs. The following three structures presently exist within the Wolverine Glacier proposed RNA: a small A-frame cabin, a weather station, and a stream gauging station (presently non-operational). All of these structures have been invaluable in supporting the historic research activity within the proposed RNA.

Effects of RNA classification on Special Designations

EVOS Acquisition Areas

None of the RNA proposals occur within the EVOS acquisition areas.

Wild and Scenic Rivers

The only eligible RNA that overlaps with eligible Wild and Scenic Rivers is the Columbia Glacier-Granite Cove area. Under alternatives D and F approximately 2,000 acres of overlap occur between the two designations at Columbia Glacier-Granite Cove. The eligible Wild and Scenic River designation for the overlap area is "Wild" for both alternatives D and F. Overall, Wild River and RNA

management are compatible since both emphasize allowing natural conditions to prevail.

Wilderness

Overall, wilderness and RNA management is compatible since both emphasize allowing natural conditions to prevail. Primary distinctions in management between the two allocations are that nonmotorized recreational use is permitted and trails may be constructed in wilderness. In contrast, recreational use is permitted in RNAs only if the use does not threaten the values for which the RNA was proposed and trails can only be constructed if they contribute to the objectives or to the protection of the RNA.

ANILCA 501(b) Lands

The following three eligible RNAs occur within ANILCA 501(b) lands: Copper Sands, Pete Dahl Slough, and Schwan Glacier Terminus. Copper Sands is a proposed RNA under alternatives C, D, E, and F. Pete Dahl Slough and Schwan Glacier Terminus are proposed RNAs under the No Action Alternative. RNA designation would limit any manipulations of the RNA to activities specifically needed to restore natural ecosystem conditions. Habitat manipulation is allowed if specifically designed for the protection of threatened, endangered, or sensitive species.

Effects of RNA classification on Timber Management

RNAs are not available for timber harvest. Table 3-63 lists the tentatively suitable acres in each of the eligible RNAs.

Table 3-63: Summary of tentatively suitable timber acres within designated (Green Island) and eligible RNAs by alternative.

Area	Alternative							
	NA	Preffered	A	B	C	D	E	F
Green Island	0	0	0	0	0	0	0	0
Columbia Glacier-Granite Cove	770	.	.	.	.	770	770	770
Copper Sands	0	0	.	.	0	0	0	0
Kenai Lake/Black Mountain	490	660	.	660	660	660	660	660
Wolverine Glacier	0	0	.	.	.	0	0	0
Cedar Bay	.	.	.	770	770	770	770	770
Cutoff Creek	.	.	.	.	.	1,010	.	1,010
Olsen Creek	.	980	.	980	980	980	980	980
Blackstone Glacier	0	.	.	.	.	.	.	.
Harvard Glacier	0	.	.	.	.	.	.	.
Pete Dahl Slough	0	.	.	.	.	.	.	.
Schwan Glacier Terminus	0	.	.	.	.	.	.	.
Total	1,260	1,640	0	2,410	2,410	4,190	3,180	4,190

Effects of RNA classification on Minerals Management

There has been little minerals activity in any of the proposed RNAs. If locatable minerals are identified within any of the proposed RNAs, upon establishment, the Regional Forester (following FSM 4063.35, R-10 Supplement 4000-93-1) will consider whether to request the Bureau of Land Management to withdraw the

area(s). Such decisions will be based on recommendations made by the Regional Research Natural Area Committee, based on several factors, including:

- the extent of mineral resources believed to be located in the area;
- the extent and value of any valid existing rights to such minerals;
- the likelihood that mineral development will occur in the area in the foreseeable future;
- the potential disruption of research use of the area resulting from mineral development; and,
- the cost and administrative burden of requesting and processing the mineral withdrawal.

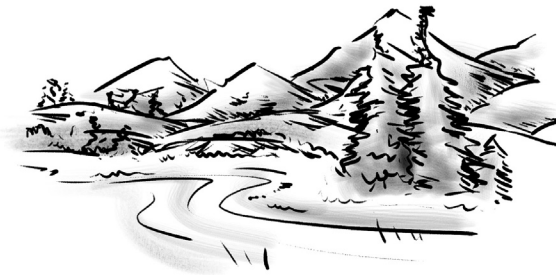
Oil and gas leasing is unavailable in the proposed RNAs. However, the impact on oil and gas leasing is minimal since the proposed RNAs are within areas that have been identified as having no or low potential for oil and gas development.

Extraction of salable minerals (sand, gravel, hard rock for crushing, and landscape materials) would not be allowed in RNAs. There is abundant mineral material available on the Forest outside of the RNAs.

Cumulative Effects

There are many areas adjacent to the Chugach National Forest where ecological processes are largely unaffected by human influences; Wrangell-Saint Elias National Park and Preserve (largely Wilderness), Kenai Fjords National Park, and designated Wilderness on the Kenai National Wildlife Refuge. Designation of RNAs will add to the acreage on the Forest where ecological processes are largely unaffected by human influences. This could positively affect biological diversity on the Forest by providing a larger area allocated to prescriptions where ecological processes are largely unaffected by human influences.

Cumulative effects resulting from designation of RNAs would include present and future loss of commodity production (principally wood products) and the loss of fish and wildlife habitat enhancement opportunities. Recreational pursuits in the future could be affected by some of the limitations prescribed by RNA direction on types of recreation allowed and limits on accessibility.



Roadless Areas

Introduction

Management of roadless land on the Chugach National Forest is a significant concern with the public, as expressed by issues on sustaining ecosystems, protecting fish and wildlife habitat, designating undeveloped areas for motorized and nonmotorized recreation, maintaining natural quiet areas, and protecting scenic quality. While there is no single designation that applies to roadless area management, many Category 1 and 2 management area prescriptions are applied to areas that are considered roadless. The common theme of these prescriptions is that they prohibit or limit road construction and other activities that would significantly alter the landscape.

Legal and Administrative Framework

- The **National Forest Management Act of 1976 (NFMA)** planning regulations requires the consideration of several criteria in evaluating roadless lands.
- **Forest Service's Roadless Area Conservation Rule (36 CFR Part 294)** – The Forest Service is reevaluating its Roadless Area Conservation Rule (36 CFR 294) and is currently enjoined from implementing all aspects of the rule by the U.S. District Court, District of Idaho (U.S. District Court for the District of Idaho 2001). The Forest Service issued interim direction for Roadless Area Protection in July 2001. The Chugach National Forest will manage inventoried roadless lands consistent with the disposition of the final rule.

Key Indicators

- Number of acres managed for roadless values
- Number of roadless acres managed with roads
- Number of roadless acres actually disturbed by roads

Resource Protection Measures

Roadless areas will be managed through Revised Forest Plan management area prescriptions, standards and guidelines.

<h2>Affected Environment</h2>

Introduction

An updated roadless inventory divided the Forest into 16 roadless areas totaling 5,434,710 acres. This is about 99 percent of the Forest's total acres. About 57,000 acres of the Forest are considered roaded. Table 3-74, in the Wilderness Section, displays the 16 roadless areas, their acreage and any special

designations applicable to the area. Individual reports on each roadless area are found in Appendix C.

Current Management

Consistent with congressional intent for the Nellie Juan-College Fiord Wilderness Study Area, 1984 Forest Plan direction is to manage the Nellie Juan-College Fiord area to maintain its presently existing wilderness character (1980) and potential for inclusion in the National Wilderness Preservation System.

Hinchinbrook Island, the Russian River/ Resurrection River area, and the Eastern Copper River/Martin River areas are managed under the 1984 Forest Plan as Primitive II ROS class designation. Road building (except for valid existing rights) is not permitted.

Other areas in the Forest had no specific direction to maintain their roadless character. Topographic and economic constraints, and standards and guidelines in the Revised Forest Plan protect many of the roadless area values.

As required by the 1982 CNI Settlement Agreement, Chugach Alaska Corporation (CAC) has been granted an easement to construct a road from the Copper River Highway to their lands near Carbon Mountain (Chugach Alaska Corporation 1999a). The 30-mile road would cross through the Bering Lake Roadless Area. This road corridor (1/4 mile either side of the road) was not included in the roadless area acreage. There is also a right-of-way to CAC from the Katalla area northward to private lands in the Lake Kushtaka area. This road corridor (1/4 mile either side of the road) was not included in the roadless area acreage.

The Montague Island Roadless Area had a 37-mile special use road that was not open to the public. This road has been closed and obliterated. This area is now included in the Montague Roadless Area.

<h2>Environmental Consequences</h2>
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Table 3-64 displays, by alternative, the acres of lands managed to maintain their roadless values (roadless), the acres of land that may be roaded based on specific standards and guidelines found in the management area prescriptions (conditional), and acres of roadless lands where roads maybe necessary to meet the management intent of the area (roads allowed). During the planning horizon (50-years) only a small percent of the acres available for roading are likely to be roaded.

Table 3-64: Acres of roadless areas potentially affected by management activities (M acres).

	Alternative							
	No Action	Preferred	A	B	C	D	E	F
Roadless	2,713	5,285	2,166	3,926	4,989	5,068	5,117	5,435
Roads								
Conditional	137	133	0	112	203	320	298	0
Roads Allowed	2,585	17	3,269	1,397	243	47	19	0
Total	5,435	5,435	5,435	5,435	5,435	5,435	5,435	5,435

All of the alternatives retain much of the roadless characteristics of these roadless lands that contribute to the unique character of the Chugach National Forest. Under Alternative F, there would be no road construction and reconstruction activities including temporary road construction in any inventoried roadless area. The Preferred Alternative allocates 97 percent of the inventoried roadless land to management area prescriptions that limit road construction. Alternative C allocates 92 percent, Alternative D, 93 percent, and Alternative E, 94 percent. The No Action Alternative and Alternatives A and B allocate the least amount of roadless areas to management prescriptions which retain roadless values. The No Action Alternative allocates 50 percent, Alternative A, 40 percent and Alternative B, 72 percent.

Under the Preferred Alternative, 149,960 acres are in management area prescriptions that permit the Forest Service to construct roads:

Prescription	Roadless Area	Acres
312 – Fish, Wildlife, and Recreation	Johnson Pass	11,940
	Kenai Lake	38,790
	Kenai Mountain	43,080
	Nellie Juan	130
	Resurrection	38,190
	Twentymile	720
314 – Forest Restoration	Resurrection	17,110

All of these areas are on the Kenai Peninsula. Many of these areas were allocated to these prescriptions to treat the spruce beetle epidemic. About 2,000 acres of roadless lands could be affected during the first decade (Table 3-65).

The Forest Service is reevaluating its Roadless Area Conservation Rule (36 CFR 294) and is currently enjoined from implementing all aspects of the rule by the U.S. District Court, District of Idaho (U.S. District Court for the District of Idaho 2001). The Forest Service issued interim direction for Roadless Area Protection in July 2001. The Chugach National Forest will manage inventoried roadless lands consistent with the disposition of the final rule.

Management area allocation or prescriptions themselves would not directly affect the character of any roadless area until a planned activity is implemented (e.g. road construction, recreation construction, timber harvest, mineral development). Under all alternatives, activities that would reduce the current roadless areas over the 50-year planning period would occur at a very slow pace. For example,

that over the first 100 years of the Chugach National Forest, only one percent of the Forest has been developed. Table 3-65, shows the projected acres of roadless lands at the end of the first decade and 50-year planning period by alternative. Actual development might be less depending on several factors including the demand for forest products, the schedule of recreation construction, and potential mineral development in areas with approved plans of operation. Roadless areas might also be affected by unforeseeable activities including mineral development outside of areas with currently approved plans of operation, or at a scale larger than projected, and additional access to private inholdings (outstanding rights).

Projections of actual development were based on the number of miles of new road construction under each alternative. The following assumption was use in this projection: 80 percent of the timber roads, 10 percent of the facilities roads, and 100 percent of the other roads would be constructed in roadless areas. Under Alternative F, no road construction would be permitted in the unroaded portion of any inventoried roadless area. It was estimated that each mile of new road construction would indirectly affect one square mile or 640 acres of roadless land. Actual effects may be more or less. Without the specific location of a road in relationship to the roadless area, it is not possible to accurately determine the effect. For example, if a new road were built near and parallel to a roadless area boundary, very few roadless acres would be affected. On the other hand if a road were built through the middle of a roadless area, many more acres would be affected. In some instances, the new road may even fragment the roadless area.

Table 3-65: Acres of roadless lands affected by roads.

	Alternative							
	No Action	Preferred	A	B	C	D	E	F
First Decade	2,400	2,000	43,500	29,400	1,800	1,400	1,000	0
Fifth Decade	118,400	10,000	217,600	147,200	9,000	7,000	5,000	0

Alternative F would retain 100 percent of the inventoried roadless lands. The Preferred Alternative, and Alternatives C, D, and E would retain about 99.8 percent of the existing roadless land during the 50-year planning horizon. The No Action Alternative would retain 97.8 percent; Alternative B, 97.1 percent; and Alternative A, 96.0 percent. Under all alternatives, the Wilderness capability would be retained on all or most of the roadless lands on the Chugach National Forest.

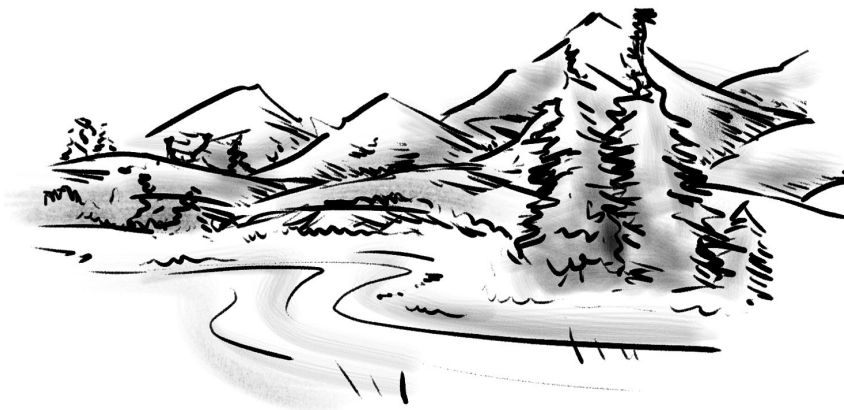
As roadless areas are developed, the apparent naturalness of the area would change, as human activities would dominate small portions of a roadless area. There would also be a loss of remoteness and opportunity for solitude. Some special features and places may be affected. Those wildlife species that depend

on large expanses of undeveloped country may be affected. Roads could fragment some areas and boundaries could be more difficult to manage.

It may be possible to mitigate the loss of roadless characteristics in some situations. The applicability and practicality of mitigation measures depends on the site-specific information and analysis. Possible mitigation includes road closure or obliteration, after the management need for the road is concluded.

Cumulative Effects

The Chugach National Forest is adjacent to many areas managed for their wilderness or roadless values. These areas include Chugach State Park, Kenai Fjords National Park, Kenai National Wildlife Refuge (two designated Wildernesses), and Wrangell-St. Elias National Park and Preserve (largely Wilderness). Many other adjacent lands are roadless because of their topography. As tourism and populations increase in Southcentral Alaska, there will be increased pressures on roadless areas for a variety of uses. However, much of the Chugach would remain roadless because of its rugged topography and glacier features.



Access Management

Introduction

Access is associated with almost every activity that takes place on the Chugach National Forest. Access has been identified as one of the most important situations for the Revised Forest Plan to address. Access is necessary for outdoor recreation, suppressing wildland fires, managing fish and wildlife, removing natural resources such as timber products and minerals, gathering fuel wood, accessing private in-holdings, maintaining electronic sites and utility corridors, and managing the Forest in general.

Access management is a tool used to facilitate the movement of people and products. It provides opportunities for the activities listed above and protects resources, mitigates impacts, and minimizes conflict. Modes of access on the Forest include motorized and nonmotorized means ranging from large commercial trucks and automobiles to aircraft and boats to bicycles to horses to foot travel. Much of the access to the Forest is not by road but utilizes other motorized (aircraft, boat, snowmachine) and nonmotorized (horse, foot, ski) methods. These various forms of travel may occur on paved highways, gravel and dirt roads, trails designated for motorized and/or nonmotorized use; rivers, lakes, and saltwater; and general cross country travel. Motorized surface travel off roads and trails is permitted only in winter with adequate snow cover (primarily snowmachines) unless an area is expressly designated open by a Forest Order. Limited areas have been designated open to summer off highway vehicle (OHV) type use on the Kenai Peninsula and portions of the Copper River Delta.

Access analysis is an integrated ecological, social and economic approach to transportation planning, addressing both existing and future roads and trails. It displays and describes management opportunities for changing the current road and trail system to better address future needs, budgets and environmental concerns (USDA Forest Service 1999d). The access analysis is summarized here and presented in full in the Revised Forest Plan, Appendix B.

Legal and Administrative Framework

- The **Forest and Rangelands Renewable Resource Planning Act of 1974, as amended, Section 10** provides for a proper transportation system to service the Forest.
- The **National Forest Management Act of 1976 (NFMA)** directs the Secretary of Agriculture to specify guidelines for land management plans to ensure protection of national forest resources.

- The **Alaska National Interest Lands Conservation Act of 1980 (ANILCA), as amended**, provides a variety of access rights and allowed motorized uses for subsistence, traditional activities and several specified uses on Conservation System Units and federal lands.
- **Executive Order 11644, as amended by Executive Order 11989**, established the direction for use of off-road vehicles on public lands.
- **36 CFR 219.21** provide for the classification of areas and trails on National Forest System lands as to whether off-road vehicles may be permitted.
- The **Roads Analysis Policy of January 12, 2001** provides a final policy governing the National Forest Transportation System.

Key Indicators

- Acres available for off-road motorized and nonmotorized activities by season
- Miles of new road construction
- Total miles of trails available for motorized and nonmotorized activities by season
- Acres available for helicopter activities by season

Resource Protection Measures

Specific resource mitigation measures for development of access routes are stipulated in the Forestwide standards and guidelines and will be further identified in project level analysis prior to any development of new access or changes in existing access.

<h3>Affected Environment</h3>

Access management includes all roads, trails and commonly used areas on the Chugach National Forest.

Forestwide

Developed access within the Chugach National Forest is limited. Most roads and trails are concentrated on the Kenai Peninsula. There are no public roads in Prince William Sound and only one main road on the Copper River Delta. The same applies to trails, which are most concentrated on the Kenai Peninsula, with a few in Prince William Sound and on the Copper River Delta. In Prince William Sound, the protected marine waters provide access for all types of boats and float planes. Lakes throughout the Forest provide access for floatplanes and rivers for jet boats and airboats. In summer overland travel is very difficult without developed routes as glaciers and glacier streams, steep mountainous terrain and dense alder thickets make travel very difficult even for the most

adventurous. In winter, access is a little better. With adequate snow cover, much of the Forest is accessible by snowmachine or skiing. Steep terrain still limits access in many areas, so Forest visitors are often concentrated in areas resulting in user conflicts. The interests surrounding access are generally focused on recreation related access.

Current access management can best be described by seasons, as there is a significant difference between summer and winter access.

Areas

In summer (snow-free periods), the Forest is closed to all cross-county motorized travel. During this period, four-wheeled vehicles, trail bikes, and OHVs are allowed on existing roads, power line rights-of-way, and some outwash plains. Most trails on the Kenai Peninsula are closed to motorized use during this period.

In winter (generally December 1 – April 30) with adequate snow cover, the Forest is open to over-the-snow machines, with a few exceptions.

The following areas are currently closed yearlong to all motorized vehicles including over-the-snow-machines:

Copper River Delta - all areas south of the Copper River Highway extending from Mountain Slough eastward across the Copper River to the base of Ragged Mountains. The closure includes Martin Lake and Little Martin Lake.

Girdwood – the drainages of Crow Creek, Glacier Creek, Winner Creek, and Virgin Creek to the edge of the muskeg meadow near the Forest boundary.

Turnagain Pass – the area bordered on the west by Ingram Creek and the Seward Highway to the Johnson Pass Trailhead Road (#927), on the south by Center and Divide Creek, and on the east by the divide separating the area from the Placer River Valley.

Manitoba Mountain – the area bordered on the west by Canyon Creek and the Forest boundary, on the north by Wilson Creek, on the south by Mills Creek Road (#923) and Juneau Creek, and on the east by the ridge line formed by Manitoba Mountain.

Hinchinbrook and Montague Islands – both these islands are closed to all motorized vehicles, except for an area south of Boswell Bay that is open to OHV use on un-vegetated sand dunes.

Portage Valley – the area east of the parking lot at the head of Portage Valley, including Portage Lake, Bear Valley, Byron Valley and Portage, Burns, and Byron Glaciers. Portage Lake is closed to all water, ice, and airborne craft; except point-to-point boat travel is allowed along the northwest shore, between the source of Portage Creek and the outlet of Placer Creek in Bear Valley.

Roads

The Chugach National Forest has a very limited road network. The road system on the Forest totals about 285 miles. State highways (such as Sterling and Seward) and Forest highways (such as Portage, Copper River, Hope and Exit Glacier) are the backbone of the road system. There are 100 miles of state highways and 75 miles of Forest highways on the Chugach National Forest.

There are also 97 miles of Forest Development Roads and 13 miles of Unclassified Roads on the Chugach (Table 3-66). Most Forest Development Roads are concentrated in the valley bottoms. They include roads that access developed sites like campgrounds, trailheads and administrative sites; roads built under a special use permit; and roads developed for resource activities, such as timber sales. Some of these roads are currently closed to vehicle travel, but available for nonmotorized use. Most roads are gravel surfaced, receiving minimal annual maintenance beyond grading. Roads under special use permit are maintained by the permittee. In addition, a 30-mile road easement has been granted to construct the Carbon Mountain Road on the Copper River Delta. (Carbon Mountain Access Road, Chugach Alaska Corporation, MOU of March 1998).

Table 3-66: Miles of inventoried road.

Geographic Area	Miles of Road	Miles Restricted ¹	Miles Open ²
Kenai Peninsula	91	35	56
Prince William Sound	1	1	0
Copper River Delta	18	0	18
Total	110	36	74

¹ Restricted to OHV or nonmotorized uses; open to vehicle use only for specific management activities

² Some miles may be restricted seasonally i.e. unplowed roads

Trails

Trails have been developed for access throughout the Forest, with most trails concentrated on the Kenai Peninsula. Currently, all trails on the Kenai Peninsula are closed to summer motorized uses. In winter, most are open to over-snow motorized travel.

Trails provide access to unroaded areas, typically beginning from an existing road or saltwater shore. Access to fishing and hunting activities, many Forest Service cabins, and winter skiing or snow machining are facilitated with trails. Currently there are approximately 555 miles of trails including user-developed trails and marked easements (see Table 3-67). Trails standards range from very highly developed to primitive routes marked with blazes. About 50 percent of the trails receive annual maintenance such as brushing and trail tread work (culvert cleaning, water bars etc.) with heavier maintenance done as needed.

Table 3-67: Miles of inventoried trails.

Geographic Area	Miles of Trail	Summer Motorized	Summer Nonmotorized	Winter Motorized ¹	Winter Nonmotorized
Kenai Peninsula	362	20	342	267	151
Prince William Sound	88	0	88	0	88
Copper River Delta	105	4	101	78	75
Total	555	24	531	345	314

¹ Some trails have seasonal winter closures for motorized use.

There are 91 miles of roads in the Two Moon Bay area not included in this table. This area was acquired through the *Exxon Valdez* oil spill restoration program. The Forest is currently developing a watershed rehabilitation plan for the area.

Environmental Consequences

General Effects

In all alternatives, existing developed access routes within the Forest will be maintained and new access routes may be developed. The primary difference is the number of new access routes anticipated to be developed and whether these access routes allow for motorized or nonmotorized activities. The alternatives also vary in the number and size of areas closed to motorized cross-country travel, both summer and winter.

Direct and Indirect Effects

Access management direction on the Forest generally allows motorized use on roads, trails and areas unless a Forest Order specifically restricts or closes it.

There are two main factors affecting access: (1) the effect from changing management area prescriptions, and (2) the effect from new road construction and road obliteration. Because the Chugach Forest has so few roads, few roads are planned for obliteration under any alternative. Some existing roads may be converted to trails, but the access would remain.

Effects from Management Prescriptions

Management area prescriptions would have the greatest effect on Forest access. Category 1 and 2 prescriptions would not allow new Forest Service roads. Alternatives with a higher percentage of these prescriptions would allow for less road-developed access. All prescriptions, except 142 – Natural Processes, allow for new trail construction. Alternatives vary in the areas allowing motorized or nonmotorized activities. Category 1 and some Category 2 prescriptions are nonmotorized. Complicating the Motorized/Nonmotorized Access Interest are seasonal exceptions to the base prescriptions, allowing or not allowing motorized uses seasonally. Table 3-68 shows the acres of the Forest that would be available for motorized and nonmotorized recreation in the summer and winter by alternative.

Table 3-68: Gross acres available for access, motorized and nonmotorized activities¹ (M acres).

		Alternative							
		No Action	Preferred	A	B	C	D	E	F
Kenai Peninsula	Acres/Percent Summer Motorized ²	1,056 90%	423 36%	1,173 100%	1,074 92%	425 36%	228 19%	244 21%	272 23%
	Acres/Percent Summer Nonmotorized	1,173 100%	1,173 100%	1,173 100%	1,173 100%	1,173 100%	1,173 100%	1,173 100%	1,173 100%
	Acres/Percent Winter Motorized	1,169 99%	963 82%	1,173 100%	1,103 945	935 80%	491 42%	957 82%	981 84%
	Acres/Percent Winter Nonmotorized	1,173 100%	1,173 100%	1,173 100%	1,173 100%	1,173 100%	1,173 100%	1,173 100%	1,173 100%
Prince William Sound	Acres/Percent Summer Motorized ²	485 18%	242 9%	2,538 97%	1,347 51%	846 32%	663 25%	343 13%	71 3%
	Acres/Percent Summer Nonmotorized	2,625 100%	2,625 100%	2,625 100%	2,625 100%	2,625 100%	2,625 100%	2,625 100%	2,625 100%
	Acres/Percent Winter Motorized	2,027 77%	2,205 84%	2,538 97%	2,212 84%	2,015 77%	2,040 78%	2,010 77%	2,289 87%
	Acres/Percent Winter Nonmotorized	2,265 100%	2,625 100%	2,625 100%	2,625 100%	2,625 100%	2,625 100%	2,625 100%	2,625 100%
Copper River Delta	Acres/Percent Summer Motorized ²	1,236 73%	625 37%	1,675 99%	1,323 78%	449 26%	280 17%	380 22%	244 14%
	Acres/Percent Summer Nonmotorized	1,694 100%	1,694 100%	1,694 100%	1,694 100%	1,694 100%	1,694 100%	1,694 100%	1,694 100%
	Acres/Percent Winter Motorized	1,236 73%	1,623 96%	1,676 99%	1,324 78%	1,078 64%	1,635 97%	1,649 97%	1,647 97%
	Acres/Percent Winter Nonmotorized	1,694 100%	1,694 100%	1,694 100%	1,694 100%	1,694 100%	1,694 100%	1,694 100%	1,694 100%

¹ Actual acres available may be less due to terrain and seasonal limits.² Summer motorized activities are limited to designated routes, trails or areas.**Effects from Timber Management**

Access for timber management would consist mostly of short local roads. About 80 percent of these roads would be built in roadless areas of the Forest. These roads would remain open for public use and continued management of timber resources. Only Alternatives A, B and No Action would have road construction for timber management. Table 3-69a shows the miles of new road construction for timber management at the end of the first decade.

Table 3-69a: New roads for timber management at the end of first decade (miles).

	Alternative							
	No Action	Preferred	A	B	C	D	E	F
Kenai Peninsula	13	0	15	9	0	0	0	0
Prince William Sound	22	0	32	21	0	0	0	0
Copper River Delta	9	0	34	4	0	0	0	0
Total	44	0	81	34	0	0	0	0

Effects from Recreation/Tourism Management

The vast majority of access interests relate to recreation/tourism uses and activities. People are seeking the “Alaska Experience” in a variety of ways and in large and small groups. The classic conflict between motorized and nonmotorized users, especially in winter, is the dominant access situation for the Revised Forest Plan to address. Additional interests where access is a key element are for horses, bicycles, heli-skiing and hiking, and boats as means of access. Access for recreation activities is of interest to people of all levels of ability. Appendix F displays how motorized access (highway vehicles, high clearance vehicles, off road vehicles, motorcycles, and snowmachines) and nonmotorized access (horses, hikers, skiers, bicycles and dog sleds) would be managed under each alternative.

The alternatives provide a broad range and level of potential access to the Forest. Alternatives A and B would provide a more aggressive, developed network of roads and trails and more opportunities for motorized access in summer and winter. Alternatives E and F would provide trails and emphasize summer nonmotorized and a mix of motorized and nonmotorized winter access. In all alternatives, horses and bicycles would be allowed on many trails beginning on July 1 of each year. See the Access Plan in Appendix F for specific trails. There is currently a closure on horse use on Kenai Peninsula trails from April 1 – June 30.

In all alternatives, there is new road construction proposed with the development of recreation and administrative facilities. Most of these roads are expected to be small segments to new recreation developments, such as campgrounds, trailheads, and viewpoints. Most would be located within existing road corridors on the Kenai Peninsula. Additionally, Alternative B identifies potential roads (16 miles the first decade) into new areas for improved and easier access. All of these roads would be constructed on the Kenai Peninsula. Table 3-69b shows the miles of new road construction for other uses at the end of the first decade. Table 3-70 shows the total miles of trail available at the end of the first decade.

Table 3-69b: New roads for other uses at the end of first decade (miles).

	Alternative							
	No Action	Preferred	A	B	C	D	E	F
Kenai Peninsula	18	24	26	41	23	17	11	9
Prince William Sound	1	1	1	1	1	1	1	1
Copper River Delta	3	7	5	5	4	4	4	3
Total	22	32	32	47	28	22	16	13

Table 3-70: Trail access at the end of first decade (miles available).

		Alternative							
		No Action	Preferred	A	B	C	D	E	F
Kenai Peninsula	Winter								
	Motorized	283	380	427	473	408	308	345	316
	Nonmotorized	185	174	90	89	145	231	136	124
	Total	468	554	517	562	553	539	481	440
	Summer								
	Motorized	48	14	40	213	101	6	3	3
	Nonmotorized	364	490	421	234	389	483	428	387
	Total	412	504	461	447	490	489	431	390
Prince William Sound	Winter								
	Motorized	0	8	72	75	54	0	0	7
	Nonmotorized	99	138	97	119	140	155	106	91
	Total	99	146	169	194	194	155	106	98
	Summer								
	Motorized	0	8	0	33	28	0	0	1
	Nonmotorized	99	138	169	161	165	155	106	96
	Total	99	146	169	194	193	155	106	97
Copper River Delta	Winter								
	Motorized	78	101	140	137	111	97	107	103
	Nonmotorized	92	70	42	60	87	83	64	52
	Total	170	171	182	197	198	180	171	155
	Summer								
	Motorized	4	5	37	36	7	3	3	3
	Nonmotorized	118	117	97	111	144	130	121	106
	Total	122	122	134	147	151	133	124	109

A key element for nonmotorized access is the ease in getting to a nonmotorized area. Nonmotorized areas located far from easy access are of little use to most nonmotorized users. Ease of access is a function of the proximity to existing roads, trails or communities. Alternatives A and No Action would provide no specific areas exclusively for nonmotorized opportunities adjacent to roads or communities. Alternatives B and C would provide the existing area at Turnagain Pass and Manitoba Mountain and seasonal time-share on Resurrection Pass. Alternatives E and F would allow for traditional activities including motorized uses. Alternative D and the Preferred would provide the most nonmotorized opportunities near existing access and communities. Several areas are specifically identified for nonmotorized activities adjacent to the Seward Highway.

Helicopter access for winter heli-skiing and, to a lesser degree, summer heli-hiking is provided in every alternative. Alternatives A, B and the No Action would make available the greatest amount of area for year-round helicopter access. Alternatives C, D, E, and the Preferred Alternative identify specific areas for winter and summer helicopter activities. Alternatives E and F would limit helicopter access both in winter and summer. Actual acres available for helicopter skiing and hiking by alternative can be found in the planning record. Additional information on roads, trails and areas open/closed to motorized use

(snowmachines and helicopters) can be found in the Recreation and Tourism section of this Chapter.

Cumulative Effects

In the first decade, because the Chugach has such a small network of access routes, the miles of access routes, primarily roads and trails, are anticipated to increase in all alternatives. This would disperse some recreational use to backcountry areas presently receiving little use. Existing roads available for highway vehicles would be maintained and upgraded, consistent with the setting, as use increases. The following may occur:

- use would probably be concentrated on those access routes maintained to a higher standard;
- an increase in maintenance funds would be needed to provide the necessary levels of maintenance to an expanded access net; and,
- as access increases, especially into new areas or the number of users increase because of easier access, the quality of the recreation experience may be changed or reduced. Monitoring will be used to assess these changes and the need to limit or control access or amend the Revised Forest Plan.

Two new roads to be built by others will significantly change the access patterns on the Forest. The new road to Whittier, extending the Portage Highway and replacing the railroad access, is anticipated to result in a dramatic increase in people visiting Whittier and Prince William Sound. Currently, about 200,000 recreational people visit Whittier annually. This is anticipated to increase to over one million people by the end of the decade. While the projected number of visitors has been subject to question, there is universal agreement that there will be a significant increase in people coming to Whittier and going out into the Sound. These people will be seeking access to the Forest once in the Sound.

The second new access is the Carbon Mountain Road in the Copper River Delta. Chugach Alaska Corporation (CAC) proposes to build a 30-mile long road across National Forest System lands to their Bering River Coal Fields tract. A road crossing privately owned lands (with rights of public access) links the proposed road to the Copper River Highway at mile 41. CAC proposes to harvest about 8,000 acres of commercial timber from their lands over the next 10 to 15 years (Chugach Alaska Corporation 1999a). While the road is not built across National Forest System lands, an easement has been granted and construction is anticipated in the very near future. This road will provide easier access to an area of the Forest that is now accessible only by jet and airboats and floatplanes. Prescriptions adjacent to this new road or within the “day use” radius of Whittier will dictate how Chugach National Forest lands may be accessed (see Table 3-71). The alternatives provide a range of access levels to these areas.

Table 3-71: Dominant prescription adjacent to the Carbon Mountain Road and Whittier.

		Alternative							
No Action		Preferred	A	B	C	D	E	F	
Carbon Mountain Road	501(b) - 3	501(b) - Recommended Wilderness and 501(b) - 1	501(b) - 3	501(b) - 2	501(b) - 2	501(b) - Recommended Wilderness	501(b) - Recommended Wilderness	501(b) - Recommended Wilderness	
"Day Use" Radius of Whittier	Recommended Wilderness and Backcountry	Backcountry*	Resource Development and Fish, Wildlife and Recreation	Fish, Wildlife and Recreation	Backcountry and Backcountry Motorized	Backcountry	Recommended Wilderness	Recommended Wilderness	

Scenery

Introduction

The most prized resource of the State of Alaska and the Chugach National Forest is its scenery. Locals and visitors marvel at its grandeur. The Chugach embodies all the best Alaska's scenery has to offer. From ocean shorelines to snow-covered peaks; dramatic glaciers cascading to the ocean or hanging on mountainsides, crystal clear lakes and rivers as well as the turquoise blue of glacier silt waters; forested mountain slopes giving way to alpine, rock and ice. The Chugach landscape has diversity, complexity and size that take your breath away. It is magnificent and inspiring, yet, at the same time, humbling.



The landscape of the Chugach appears natural and undisturbed by human intervention. The Chugach has been actively managing the scenery since the mid-1970s using the agency's Visual Management System and more recently its replacement, the Scenery Management System. Scenery management was developed to help meet the public's expectation for scenic beauty while allowing for multiple resource use in a way that works with natural processes to achieve a desired landscape condition.

The public has been vocal on the importance of maintaining scenic beauty on public lands. In comments received from the public during scoping and surveys on visitor satisfaction, values and quality of life all consistently rate scenery at or near the top in importance to people.



Managing for scenic quality benefits the regional economy. Tourism is a principle economy for Southcentral Alaska. Numerous studies document that the region's outstanding scenery is a major attraction. Real estate developers understand that homes or residential lots with a view are worth more than those without. The same holds true for hotels. Rooms with a view frequently command a higher price. Campsites with a view fill up first.

Changes in the scenery occur naturally through major events such as avalanches, wildland fires, floods, wind, and insect infestations. The Chugach has experienced these types of events on a regular basis. A major spruce bark beetle outbreak is currently on going and noticeably changing the forest composition on the Kenai

Peninsula. The scenery also changes through human intervention, such as logging, utility construction and facility development.

In the Revised Forest Plan, all landscapes are assigned a Scenic Integrity Objective (SIO) that defines the acceptable degree of alteration from the natural appearing landscape character. Forestwide standards and guidelines provide the direction for implementing SMS

Legal and Administrative Framework

- The **National Environmental Policy Act of 1969 (NEPA)** states that it is the “continuing responsibility of the federal government to use all practicable means to assure for all Americans, aesthetically and culturally pleasing surroundings.” NEPA directs agencies to develop practicable methodologies for scenery management of “aesthetically and culturally pleasing surroundings.” It also requires “a systematic and interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts into planning and decision-making which may have an impact on man’s environment.”
- The **Wilderness Act of 1964** directs that Wilderness be managed to retain its primeval character and influences, in its natural condition, with the human imprint in substantially unnoticeable form.
- The **Wild and Scenic Rivers Act of 1968** stipulates that the outstandingly remarkable scenic values of rivers eligible or suitable for inclusion in the system be carefully managed. Any management activities that could negatively affect the “outstandingly remarkable” scenic resources should not be conducted.
- The **National Trails System Act of 1968** states that trails should be established within scenic areas and along historic travel routes of the nation, which are often more remotely located.
- The **Forest and Rangeland Renewable Resources Planning Act of 1974** provides direction to conduct aesthetic analysis and assess the impacts on aesthetics of timber harvesting. It also provides the framework for natural resource conservation.
- The **National Forest Management Act of 1976 (NFMA)** directs that the preservation of aesthetic values be analyzed at all planning levels. Part 219.21 requires visual resources to be inventoried and evaluated as an integral part of evaluating alternatives in the forest planning process, addressing both the landscape’s visual attractiveness and the public’s visual expectations.

- **Forest Service Manuals, Chapter 2380, Landscape Management** proved Forest Service regulations and policy for visual resources.

Key Indicators

- Acres by Scenic Integrity Objectives (SIO)
- Scenic Integrity Levels

Resource Protection Measure

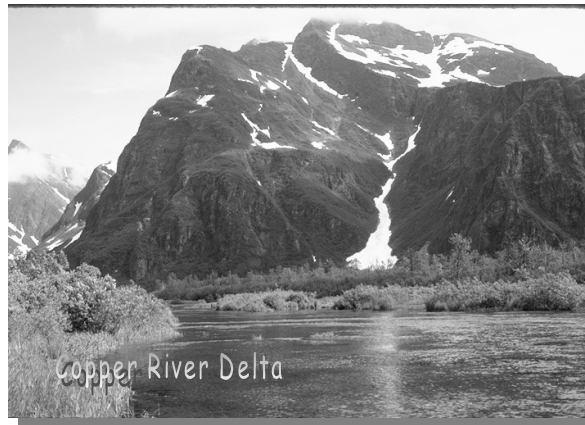
Resource protection is provided for in USDA handbooks for managing the scenery of National Forest System lands.

Affected Environment

Forestwide

The Scenic Resource of the Chugach National Forest is an important component of the total Forest resource base. The 1984 Forest Plan established Visual Quality Objectives (VQO) for the entire Forest. These objectives were intended to maintain the outstanding scenic quality found throughout the Forest. The Forest inventoried the landscape for the entire Forest in 1979. This was the basis for the Visual Quality Objectives adopted in the 1984 Forest Plan.

Changes created by management activities in the viewed landscape of the Chugach National Forest since the late 1970s have been few and mostly on the Kenai Peninsula. The biggest change has occurred from more people going to more places and viewing scenery that previously was seldom seen. Some specific changes that have occurred and have affected the scenery are: several large wildlife habitat improvement areas on the Kenai Peninsula, expanded road corridors as the result of highway reconstruction, powerline upgrades, small timber sales along the Seward Highway corridor, and several site specific changes from new recreation facilities and trails. While there have been numerous other management activities, none have had any effect on the scenery. The viewing of scenery is a major recreation use in and of itself on the Chugach National Forest. It is also a major component in the overall satisfaction of other activities such as hiking, camping, tourism, and fishing.



There has been and continues to be a change occurring to the viewed landscape on the Kenai Peninsula. The spruce bark beetle infestation is changing the forested landscape. The change to the scenery is noticed more by regular users

of the area but is almost invisible to first time visitors. The change is also more noticeable in the foreground and near middleground distances than in background. To most people, the change appears as a natural occurrence and not a negative impact, it is just different. In the context of how the landscape is viewed, the forested portion makes up a small part of the overall view. The mountains, alpine, rock and ice typically dominate the scenery with the forested parts of the view adding overall variety in line, form, color, and texture. To date, the changing scenery has not affected users or use patterns.

Changes in the scenery from the bark beetle will occur (measured in years) as spruce trees die. Much of the Kenai Peninsula has been hit hard by the beetle and is past the initial attack stage with many of the spruce trees dead and without needles. There will be a change in the line, form, color, and texture of the forest. The initial change, when the needles turn rusty red, is the most visible stage. After the needles fall (one season), the gray snags remain standing for 5 - 15 years. In pure forests of spruce, they take on a very gray color and the texture becomes very coarse. In mixed forests, which dominate the Chugach portion of the Kenai Peninsula, this change is not as apparent. Over time, the change will result in a landscape that, while natural appearing, will be different than today. In forests with a lot of spruce, as dead trees fall, these forests will likely be more open with grass and shrub cover dominating.



This change in the scenery will be most apparent in foreground (within ½ mile). The dead spruce and fallen trees will create a “messy” appearance. While considered natural appearing, it is less attractive than “healthy” forests.

The Forest was re-inventoried using the Scenery Management System (SMS) in 1997/98. SMS is a two-part process to 1) assess current

scenic conditions and identify the relative importance of the viewed landscape and 2) identify management goals and objectives for managing the viewed landscape in the Forest Plan. The first part involves defining and mapping 5 components to systematically describe the existing scenery and develop Scenic Classes. These 5 components are:

- Existing Landscape Character Descriptions
- Identifying the existing Scenic Integrity
- Identifying the existing Scenic Attractiveness
- Determining the Concern Levels and Landscape Visibility
- Determining the Scenic Classes

The second part involves defining and mapping two components using information developed in the first part of alternative development and planning process. These two components are:

- Landscape Character Goals
- Scenic Integrity Objectives

Existing Scenery Inventory

Existing Landscape Character Description

Landscape character defines a “sense of place” and describes the image or overall impression of a geographical area.

It is a description of the landscape that combines objective physical and biological elements with human elements valued for their aesthetic appeal. The attributes identified provide the frame of reference for defining the scenic attractiveness classes and existing scenic integrity of the landscape by showing what makes each landscape identifiable or unique. There are eight Landscape Characters on the Chugach National Forest:

Kenai Peninsula Geographic Area:

- 1) Turnagain Arm
- 2) Central Kenai Mountains
- 3) Maritime Kenai

Prince William Sound Geographic Area

- 4) Prince William Sound Fiords
- 5) Prince William Sound Islands
- 6) Copper Mountain

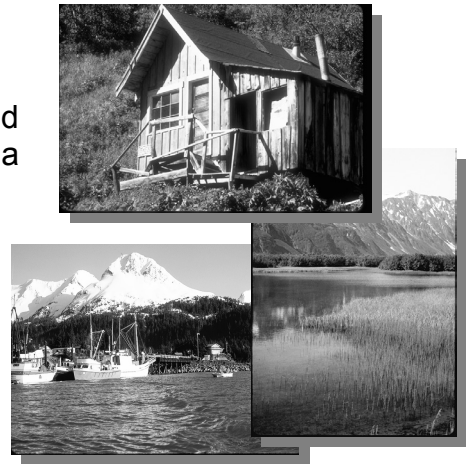
Copper River Delta Geographic Area

- 7) Copper/Bering Rivers
- 8) Tasnuna/Wernicke Rivers

All eight Landscape Characters are predominately physical and biological with little influence from human cultural attributes. Only the landscape characters on the Kenai Peninsula have any significant cultural influence from human activities.

Existing Scenic Integrity

The valued attributes of the Landscape Character description are used as a frame of reference for determining the existing scenic integrity level (SIL). SIL indicates the degree of intactness and wholeness of the landscape character, and helps locate and rank areas in need of scenic rehabilitation. It serves as a benchmark for monitoring landscapes to assess changes associated with



planned management activities. Conversely, SIL is a measure of the degree of visible disruption of landscape character. A landscape with very minimal visual disruption is considered to have high SIL. Landscapes with increasingly incompatible relationships among scenic attributes are viewed as having diminished SIL. Six terms are used to describe the levels of existing scenic integrity. These levels are expressed and mapped as follows:

- **Very high** - the valued Landscape Character is intact with only minute if any deviations. The existing landscape character and sense of place is expressed at the highest possible level.



- **High** - the valued landscape character appears intact. Deviations may be present but must repeat the form, line, color, texture and pattern common to the landscape character so that they are not evident.
- **Moderate** - the valued landscape character appears slightly altered. Noticeable deviations must remain visually subordinate to the landscape character being viewed.

- **Low** - the valued landscape character appears moderately altered. Deviations begin to dominate the valued landscape character being viewed, but they borrow valued attributes such as size, shape, edge effect, and pattern of natural openings, changes in vegetation types, or architectural styles outside the landscape being viewed. They should not only appear as valued character outside the landscape being viewed, but compatible or complementary to the character within.



- **Very low** - the valued landscape character appears heavily altered. Deviations may strongly dominate the valued landscape character. They may not borrow from valued attributes such as size, shape, edge effect, pattern of natural openings, changes in vegetation type, or architectural styles within or outside the landscape being viewed. However, deviations must be shaped by and blend with the natural terrain so that elements such as

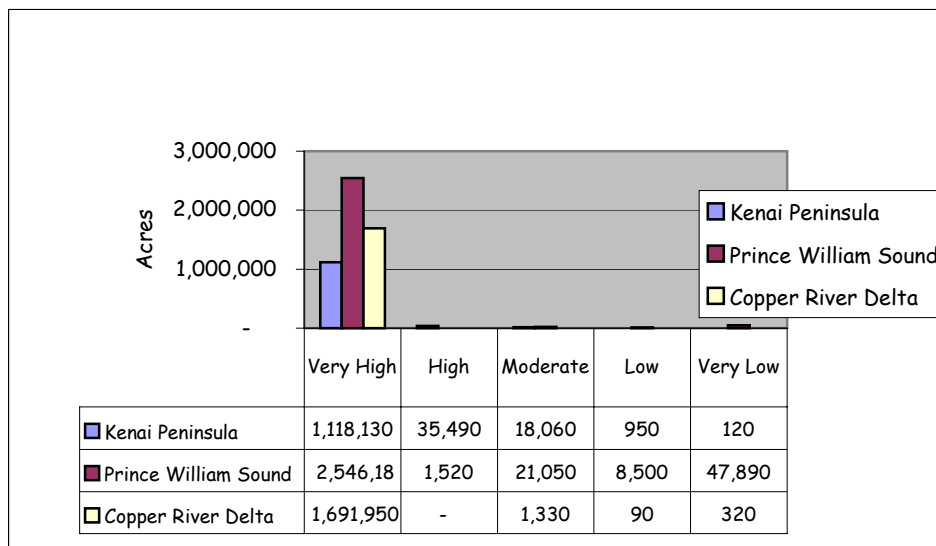
unnatural edges, roads, landings, and structures do not dominate the composition.

- **Unacceptably low** - the valued landscape character being viewed appears extremely altered. Deviations are extremely dominant and borrow little if any form, line, color, texture, pattern, or scale from the landscape character. Landscapes at this level of integrity need to be rehabilitated. This level should only be used to inventory existing integrity. The first five terms are also used to describe the Scenic Integrity Objectives (SIO) adopted in the Revised Forest Plan. The sixth SIL, Unacceptably Low, is never used as an objective for scenery management.

The Chugach National Forest is mostly landscapes with a very high level of scenic integrity. Noticeable deviations in the landscape character are concentrated along the existing travelways of the Kenai Peninsula and are associated with road construction and reconstruction over the years. Additionally, the high voltage transmission line paralleling the Seward Highway reduces the scenic integrity in certain locations when viewed from the Seward Highway. In Prince William Sound and the Copper River Delta, the landscape has few signs of human intervention and is predominantly a very high scenic integrity. The exception is lands recently acquired from the Native village corporations of Tatitlek and Eyak. These lands have been noticeably altered through significant timber harvest activities and have very low scenic integrity.

Figure 3-68 shows the existing scenic integrity levels of the Chugach National Forest.

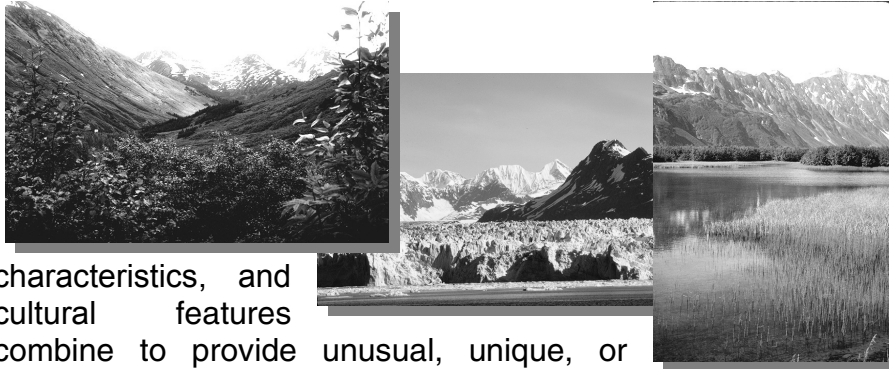
Figure 3-68: Existing scenic integrity.



Scenic Attractiveness

Scenic attractiveness is the primary indicator of the inherent scenic beauty of a landscape and of the positive responses it generates for people. It helps determine which landscapes are valued for scenic beauty, based on commonly held perceptions of the beauty of landforms, vegetation pattern and composition, water characteristics, land-use patterns and cultural features. Scenic attractiveness indicates varying levels of long-term beauty of the landscape character. The three scenic attractiveness classifications are (1) Class A - distinctive, (2) Class B – typical, and (3) Class C – Indistinctive.

- In Class A areas, landforms, vegetation patterns, water



characteristics, and cultural features combine to provide unusual, unique, or outstanding scenic quality. These landscapes have strong positive attributes of variety, unity, vividness, mystery, intactness, order, harmony, uniqueness, pattern, and balance.

- In Class B areas, landforms, vegetation patterns, water characteristics, and cultural features combine to provide ordinary or common scenic quality. These landscapes have generally



positive, yet common attributes of variety, unity, vividness, mystery, intactness, order, harmony, uniqueness, pattern, and balance.

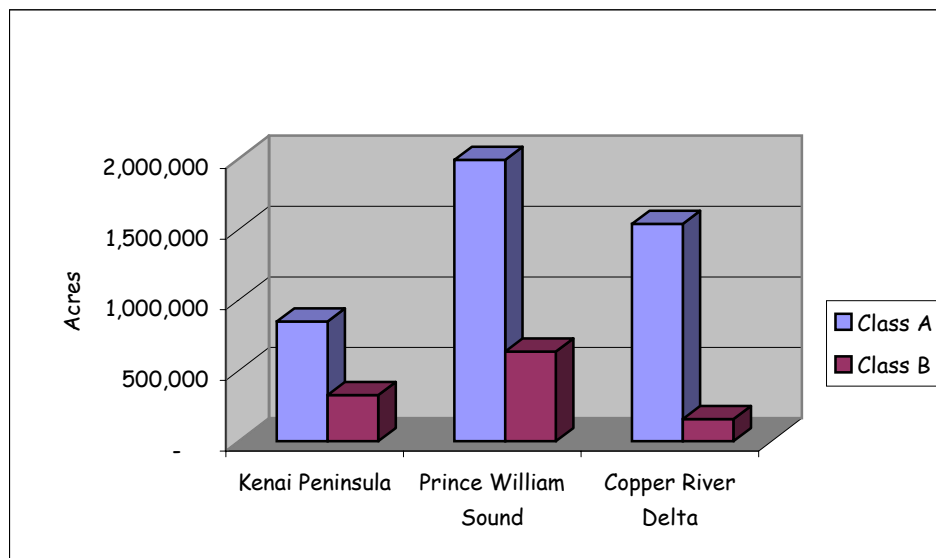
- In Class C areas, landforms, vegetation patterns, water characteristics, and cultural land use have low scenic quality. Often water and rockform of any consequence are missing in Class C landscapes. These landscapes have weak or are missing attributes of variety, unity, vividness, mystery, intactness, order,

harmony, uniqueness, pattern and balance. There are no Class C landscapes on the Chugach National Forest.

There is a reason people come to Alaska and the Chugach National Forest. The scenery is outstanding throughout the Forest. The scenery of the Chugach National Forest is predominantly Class A. The combination of forest and alpine vegetation patterns, rocky peaks, glaciers, numerous lakes and waterfall, the ocean, steep mountains and the scale and grandeur of the landscape combine to create a landscape high in attractiveness. In those places where the landscape is not quite as interesting, it is still considered Class B. The Chugach National Forest has no Class C landscapes.

Figure 3-69 shows the Scenic Attractiveness of the Chugach National Forest.

Figure 3-69: Scenic attractiveness.



Landscape Visibility

Landscape visibility identifies the relative importance and sensitivity of what is seen and perceived in the landscape. Landscape visibility is a function of many essential, interconnected considerations, including: (1) context of viewer; (2) duration of view; (3) degree of discernible detail; (4) seasonal variations; (5) number of viewers; and (6) viewers' level of concern for scenic quality.

Other natural resource values, such as wilderness, wildlife, or old-growth forest, may create needs for natural appearing landscapes and ultimately may raise the importance of maintaining high levels of scenic quality and landscape settings. These other natural resource values relate to viewer context. Sometimes only a small number of people view certain landscape, but these people have high concern for scenic quality and high expectations of outstanding scenic beauty. When associated with other related experience/opportunities such as spiritual quests, introspection, and so on, these landscapes have even higher scenic

importance and value. The importance of these landscapes is even greater if these other related experience/opportunities are available only occasionally.

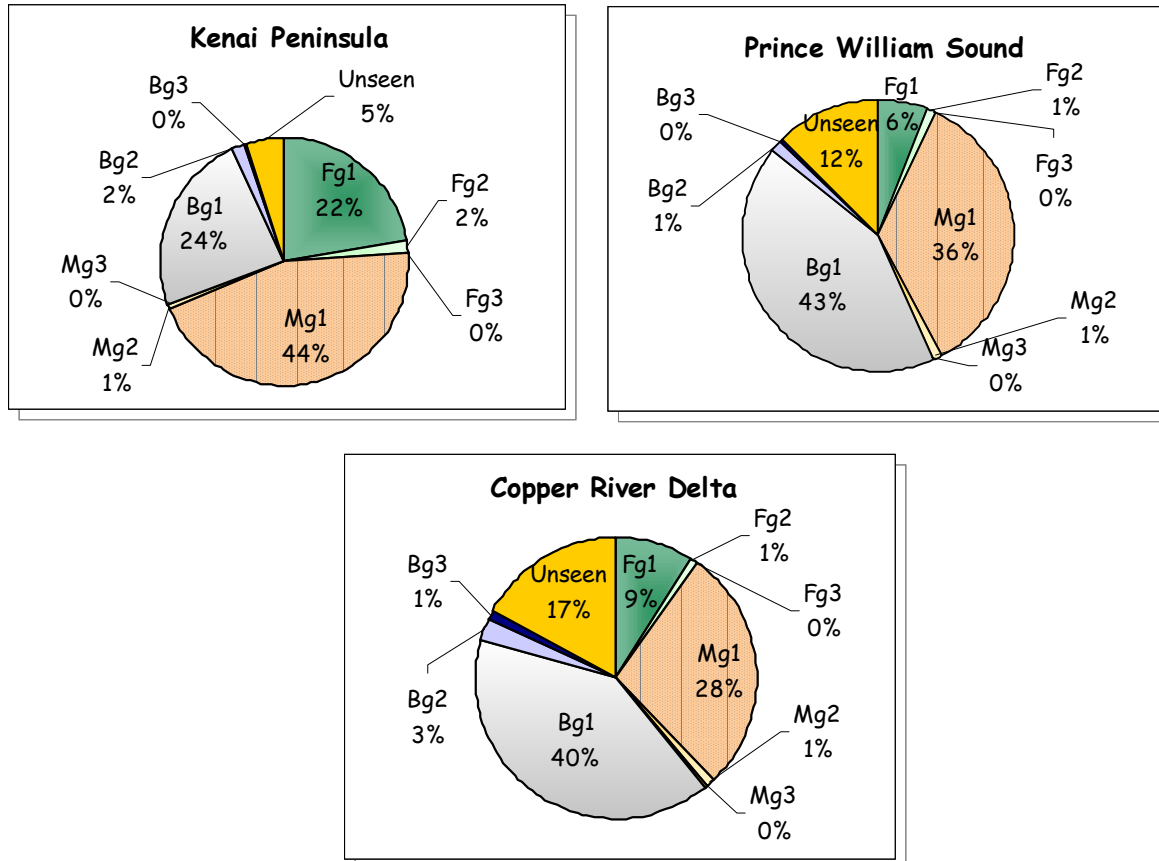
Landscapes seen close-up are more visually sensitive than those seen in muted detail from greater distances.

To do the landscape visibility analysis, the geographic information system (GIS) was used to identify the visible lands. Using various data layers, all the places from which the Forest is viewed were identified and assigned a concern level from 1 (most important) to 3 (least important). This included all roads and trails, developed sites, lakes and streams, and any other known places people use. The computer then did an analysis of lands visible from these identified points and lines, by distance zones. The end result was a map of all lands visible, the concern level of those visible lands and the distance from which they are viewed. Lands identified as unseen are generally not visible from identified travel routes and use areas.



Figure 3-70 shows the distance zones and concern levels assigned to the Forest as a result of the visibility analysis.

Figure 3-70: Landscape visibility analysis by geographic area.



Acres	Fg1	Fg2	Fg3	Mg1	Mg2	Mg3	Bg1	Bg2	Bg3	Unseen
Kenai Peninsula	261,660	18,380	20	522,980	12,220	70	276,500	19,180	2,060	59,680
Prince William Sound	156,030	25,690	3,070	923,230	29,430	3,620	1,113,930	37,290	6,610	326,240
Copper River Delta	150,530	13,000	510	475,150	18,600	5,300	680,630	45,160	15,920	288,890
Forestwide	568,220	57,070	3,600	1,921,360	60,250	8,990	2,071,060	101,630	24,590	674,810

Fg = Foreground, 0 – ½ mile; Mg = Middleground, ½ - 5 miles; Bg = Background, 5+ miles
 1 = Concern Level 1; 2 = Concern Level 2; 3 = Concern Level 3

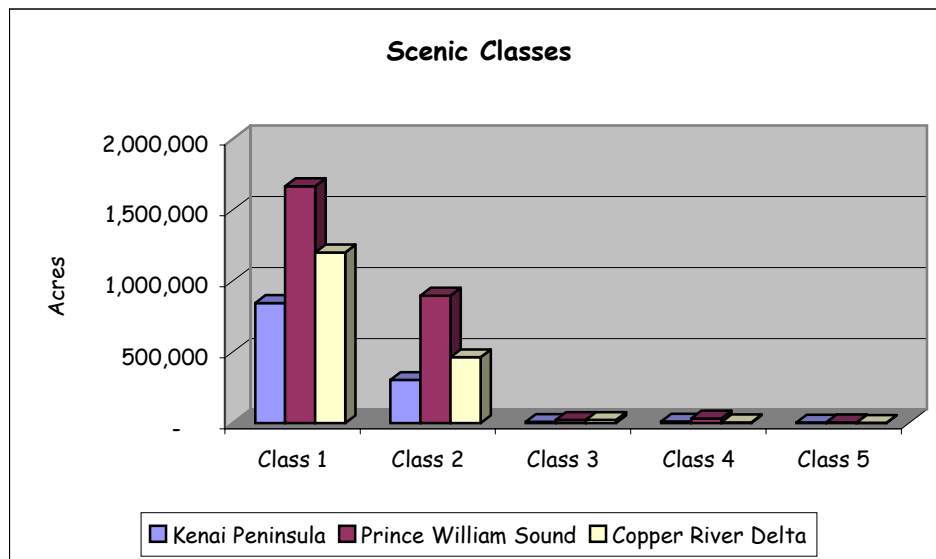
Scenic Classes

Scenic classes represent the relative landscape value by combining distance zones, concern levels, and scenic attractiveness. Using the data gathered and mapped for scenic attractiveness and landscape visibility, a numerical scenic class value is assigned to National Forest System lands. The mapped scenic classes are used during forest planning process to develop the Scenic Integrity Objectives for each alternative. There are seven scenic classes. Generally, scenic classes 1 and 2 have the highest importance and scenic value, classes 3 through 5 have moderate importance and scenic value, and classes 6 and 7 have low importance and scenic value. The Chugach National Forest has classes 1-5 only. Based on the scenic classes inventory, over 95 percent of the Forest has high scenic value.



The scenic classes represent the end of the inventory process. Scenic Integrity Objectives for each alternative are identified during alternative development using the Scenic Classes for guidance and applying the proposed management area prescription intent. Figure 3-71 shows the scenic classes of the Forest.

Figure 3-71: Scenic classes.



Environmental Consequences

Development of Management Objectives

While the previous section described the inventory process and the status of scenery on the Chugach National Forest, this section will briefly describe the elements that are used in the planning process, including analysis, leading to direction for management of the scenery on the Forest.

Landscape Character Goals

The landscape character goals are a description of the desired landscape attributes to be managed for into the future. Specific landscape attributes to achieve the goal are written directly into the management area prescriptions. Some deviation from the current natural appearing character is permitted in some management area prescriptions. While all the alternatives will maintain the overall natural appearing character of the landscape, some site-specific reduction in the natural appearing character may occur in alternatives that emphasize more resource extraction activity.

Scenic Integrity Objectives

Scenic Integrity Objectives (SIO) identify the specific management direction for managing the scenery of the Chugach National Forest in relation to the Landscape Character. Each management area prescription will have a specific range of SIOs tailored to the management objectives of the prescription. Each alternative will have a specific set of mapped SIOs based on the management area prescriptions of the alternative (Table 3-72). Scenic Integrity Objectives are mapped for the each alternative within the range of SIOs for each prescription and the Scenic Class. These identify the degree of change from the natural character that will be allowed for any area. Specific project analysis will address the actual design requirements necessary to maintain the scenic quality within the Scenic Integrity Objective.

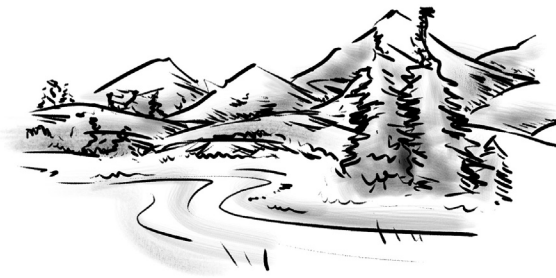




Table 3-72: Scenic integrity objectives range by prescription.

Prescription	Scenic Integrity Objective (SIO)				
	Very High	High ¹	Moderate	Low	Very Low
111 - Primitive					
121 - Wilderness Study Area					
131 - Recommended Wilderness					
132 - Wild River					
133 - 501(b) - Recommended Wilderness					
135 - 501(b) - 1					
141 - Research Natural Area					
142 - Natural Processes					
210 - Backcountry*					
211 - Backcountry					
Nonmotorized Emphasis					
Winter Motorized Emphasis					
Winter and Summer Motorized Emphasis					
212 - Backcountry Motorized					
Winter Motorized Allowed					
Winter and Summer Motorized Allowed					
213 - 501(b) - 2					
Winter Motorized Allowed					
Winter and Summer Motorized Allowed					
221 - EVOS Acquired Lands					
231 - Scenic River					
241 - Municipal Watershed					
242 - Brown Bear Core Area					
244 - Fish and Wildlife Conservation Area					
312 - Fish, Wildlife and Recreation		Fg 1 Only			
313 - Backcountry Groups					
314 - Forest Restoration		Fg 1 Only			
321 - 501(b) - 3		Fg 1 Only			
331 - Recreational River					
341 - Developed Recreation - Reduced Noise					
411 - Resource Development		Fg 1 Only			
441 - Developed Recreation Complexes					
521 - Minerals (site specific)					
522 - Major Transportation / Utility Systems (site specific)					

¹ Fg 1 Only means Foreground Concern Level 1 described in FEIS, Chapter 3, Uses and Designations of the Forest, Scenery.
 SIO Range
 SIO may exist, but will not be managed for

General Effects

Scenery is an integral part of all Forest settings and contributes to the quality of users' experience. The Chugach National Forest landscape is natural or natural appearing except for isolated alterations to the landscape character, primarily on the Kenai Peninsula. The most obvious and significant effects on scenic resources are from vegetation and landform alterations typically associated with resource management activities such as road construction, vegetation management, powerline clearing, recreation facility development, and mineral exploration and development. All projects proposed for implementation on the Forest will require a site-specific assessment of their potential impacts on scenic resources. The Scenic Integrity Objectives will serve as direction for design and implementation of management activities.



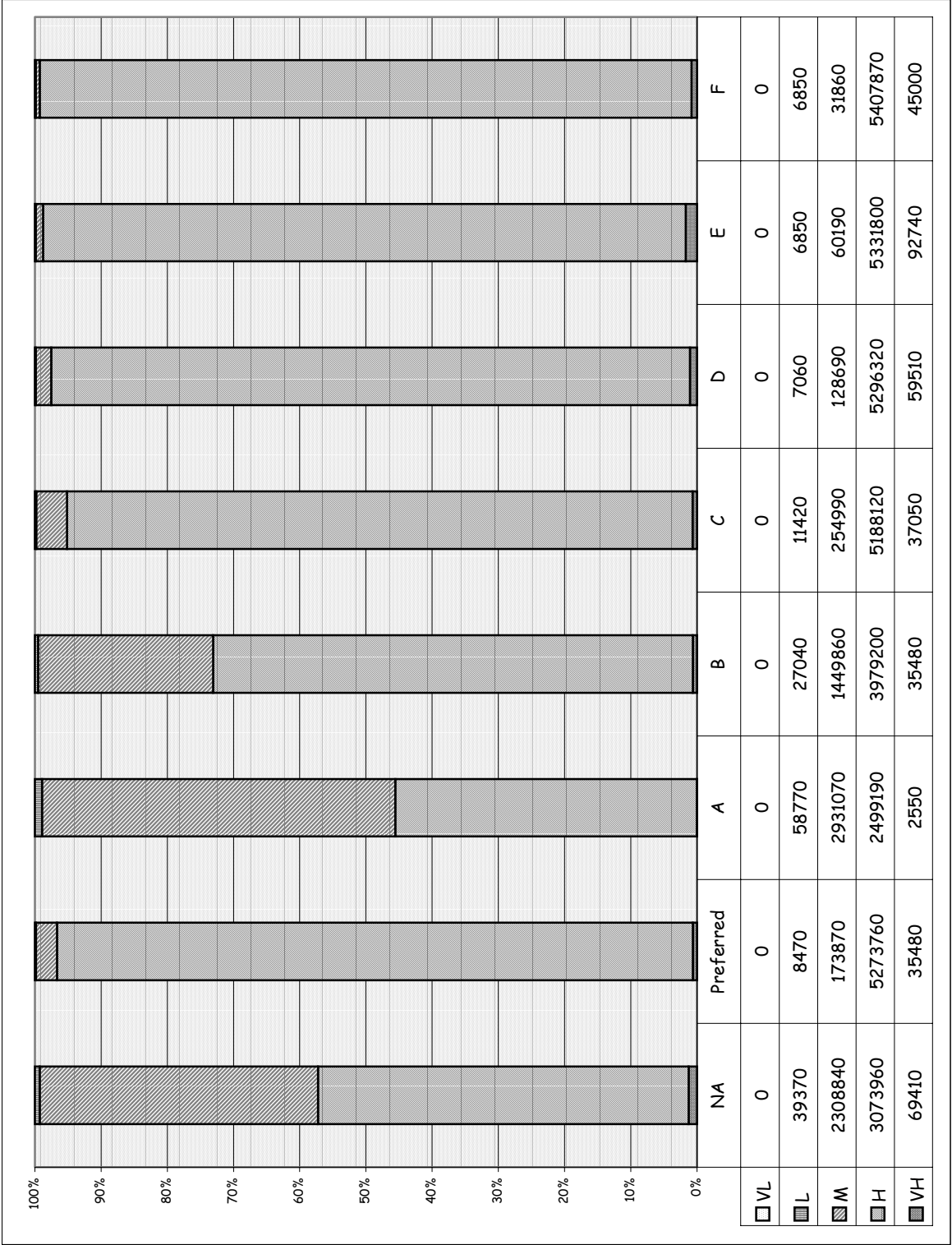
The Forest possesses areas of outstanding scenic beauty. These lands are valuable public assets that should be managed with care. The SIOs are directly related to the theme of the management area prescriptions. For each alternative, the Forestwide mix of SIOs varies with the mix of prescriptions applied to an alternative.

Each of these alternatives, if implemented, has the potential to maintain, alter or enhance the scenic character of the landscapes on the Forest to varying degrees. The Scenery Management System recognizes the interdependence of aesthetics and ecological systems, and promotes natural appearing landscapes. Across the alternatives, opportunities for viewing scenery would vary depending on a number of factors. Construction of roads, trails, and new recreation facilities would create opportunities for viewing scenery, while some viewing opportunities may be decreased by road closures. The SIOs for each alternative have been mapped.

In all alternatives, the overall landscape would maintain a natural appearing character. Even though Alternatives A, B and the No Action allow for higher levels of development and extraction of resources, noticeable changes in the scenery would be minimal.

Figure 3-72 displays the Scenic Integrity Objectives for each alternative. Maps, showing exactly where these acres are in any alternative, are available upon request.

Figure 3-72: Mapped scenic integrity objectives by alternative.



Under the No Action Alternative, management of the Forest would maintain its present course except for implementation of SMS, revision of the Allowable Sale Quantity (ASQ), and the use of updated inventories of other resources. This alternative has the potential to moderately alter scenic resources. Resource extraction or forest restoration activities, primarily vegetation management, may be noticed by visitors along the roads and trails of the Kenai Peninsula and portions of Prince William Sound, but should not detract from the overall enjoyment of viewing the scenery. The emphasis on recreation in this alternative increases the importance of high-quality scenery as a component of the recreation experience and setting.



The Preferred Alternative emphasizes natural processes across most of the Forest with restoration activities concentrated in several locations on the Kenai Peninsula. As scenery is one of the main reasons people come to the Forest, scenery is emphasized in this alternative. This alternative has the potential to slightly alter the scenic resource on the Kenai Peninsula with little change expected in Prince William Sound and the Copper River Delta. Scenic Integrity Objectives (SIOs) for selected locations on the Kenai Peninsula allow for a more noticeable change in the Landscape Character. For the rest of the Forest, SIOs maintain the existing Landscape Character.

Alternative A places the highest emphasis on resource production. This alternative would allow the most timber production along with production of other resources such as mineral development, and facilities to provide recreational experiences. This alternative has the greatest potential to alter scenic resources. Resource management activities along the roads and trails of the Kenai Peninsula, portions of Prince William Sound and road accessible areas of the Copper River Delta have lower SIOs, allowing for a more noticeable change in the Landscape Character. Some of these activities may be noticed by visitors along roads and trails, but should not detract from the overall enjoyment of viewing the scenery. This is consistent with the landscape character goals for this alternative.

Alternative B limits management activities to areas that have been previously managed. This would help minimize the impacts to forest scenery in areas that currently are natural appearing. This alternative has a low ASQ and a medium level of overall vegetation management. This alternative has the potential to develop the highest amount of new trails. This alternative has the potential to moderately alter scenic resources on the Kenai Peninsula and portions of the Copper River Delta. Little change is expected in Prince William Sound. Scenic Integrity Objectives allow for more change in the Landscape Character where more intense management is anticipated. This is consistent with the landscape character goals for this alternative.

Alternative C emphasizes wildlife habitat improvement, biological diversity and recreation. Developed recreation use would be concentrated. The emphasis on wildlife habitat improvement would contribute to a high amount of vegetation treatment. Impacts to scenic resources may result from these projects. This alternative has the potential to moderately alter scenic resources on the Kenai Peninsula, with little change expected in Prince William Sound and then Copper River Delta. Scenic Integrity Objectives are intended to maintain the Existing Landscape Character.

Alternatives D, E and F emphasize natural processes with development concentrated on existing access way. The recreation emphasis of these alternatives also emphasizes the importance of quality forest scenery in order to provide quality settings. These alternatives are expected to have little effect on scenic resources. Scenic Integrity Objectives are intended to maintain the existing Landscape Character.

For all alternatives, the SIO paralleling the Seward Highway Scenic Byway is High in the foreground, intended to maintain the existing Landscape Character.

Direct and Indirect Effects

Effects on Scenic Resources from Fire Management

In all alternatives wildland and prescribed fires have the potential to change the appearance of the landscape. Fire is a part of the natural process of the Kenai Peninsula but very rare in both Prince William Sound and the Copper River Delta. Prescribed fire on the Kenai Peninsula for fuels management does not vary by alternative. Standards and guidelines are in place to perform prescribed burns so that they appear natural (irregular shape, variable burn pattern). Visual changes may be noticed after a burn but would be come less noticeable, typically within 5 years, as new grasses, shrubs, and trees become established.

Effects on Scenic Resources from Insects and Diseases

Large insect infestations and diseases that kill forest trees have the potential to reduce scenic quality, especially if in pure stands. The spruce bark beetle infestation on the Kenai Peninsula has changed a portion of the viewed landscape. Because most of the Chugach is in mixed stands, the effect is not as great as other areas of the Kenai Peninsula where pure spruce stands have been affected. When infested areas are treated (timber harvest, prescribed fire), the scenic quality is reduced until new vegetation returns and attains a natural appearance. Standards and guidelines are in place to perform prescribed burns so that they appear natural (irregular shape, variable burn pattern). Visual changes may be noticed after a burn but would be come less noticeable, typically within 5 years, as new grasses, shrubs, and trees become



established. Alternatives A, B and No Action would introduce the most change in the scenery through management activities followed by the Preferred, C, D, E, and F.

Effects on Scenic Resources from Vegetation Management

The effects of vegetation management on scenery are addressed under fire, insect and disease, timber, and wildlife. Generally, manipulation of vegetation is the most noticeable change that can occur in the landscape. All the alternatives allow some vegetation management. Alternatives A, B and the No Action have the potential the change the scenery, especially on the Kenai Peninsula, the most.

Effects on Scenic Resources from Wildlife Management

Habitat improvement projects have the potential to change the viewed landscape. Prescribed burning and birch regeneration may affect scenic resources. The highest amount of prescribed burning occurs in Alternatives A, B, C, No Action and the Preferred. A moderate amount of prescribed burning occurs in Alternative D. The least amount of prescribed burning occurs in Alternatives E and F. All prescribed fire is planned for the Kenai Peninsula. Harvesting timber to increase forage for big game species has a potential to affect scenic resources. Standards and guidelines are in place to perform prescribed burns so that they appear natural (irregular shape, variable burn pattern). Visual changes may be noticed after a burn but would be come less noticeable, typically within 5 years, as new grasses, shrubs, and trees become established.

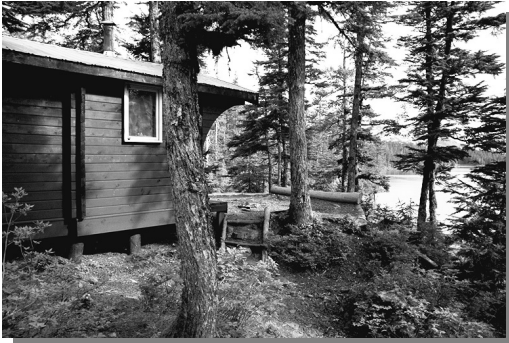
Effects on Scenic Resources from Fisheries Management

Water features such as falls, streams lakes, the ocean and wetlands are integral components of the scenery. Proposed fisheries habitat improvements do not vary significantly by alternative (Alternative E and F have less acres of lake and riparian improvement). Most projects are site specific and utilize native materials or techniques to minimize impacts to the scenery. By applying the principles of scenery management at the project level, fishery projects should have little effect on scenery.



Effects on Scenery from Recreation Management

Forestlands provide a spectrum of recreation opportunities for the public in both



developed and dispersed settings. Scenic resources affect recreation resources and vice-versa. Most popular recreation sites are at or within view of outstanding scenery. Although convenience of access can influence where people go, so does scenery. People seek outstanding scenery for most of their recreation pursuits. All the alternatives maintain large areas of the Forest undeveloped,

maintaining the existing scenic quality. In all alternatives, developed recreation facilities are most likely to be located near existing roads. Development of recreation opportunities can be a double-edged sword. On one hand, new opportunities can provide increased viewing opportunities, but these new opportunities can introduce elements not consistent with the landscape character, creating a negative effect. Alternative A and the No Action have the highest potential (although still relatively low) for the scenic quality to be reduced from recreation development. All the other alternatives may affect scenic quality along road corridors. In all alternatives, any development would apply the principles of scenery management to minimize any effect on scenic quality.

Effects on Scenic Resources from Access Management

Access management can open new areas, making more of the Chugach National Forest's outstanding landscape available and visible to more people. Over the last 20 years, few roads have been constructed and about 200 miles (including easements) of trail have been built. Of those, roads almost all have been within existing road corridors. While much of the scenery viewing on the Chugach is from roads, roads themselves can reduce scenic quality if poorly designed and located. New roads that are located and designed using the principles of scenery management will meet Scenic Integrity Objectives. None of the alternatives plan many new roads. Alternatives A, B and No Action have new roads for timber management and Alternative B includes new roads for access to new areas. Other roads proposed are associated with developed sites and are most likely to be within the existing road corridor.



Most forest scenery is viewed from roads. Tourism is a large part of the economic stability in many communities in and around the Forest, and the Chugach provides a large portion of the amenities for which visitors come to this area. The scenic quality would be maintained along all major travelways (roads and trails) on the Forest in all alternatives. All foreground areas along major travelways (roads and trails) are managed for High Scenic Integrity, as mapped.

New trails in all alternatives have the greatest potential to open more country to people, increasing the viewed landscape. Alternative C has the highest number of miles, followed by B, then D, the Preferred and A, E, No Action, and F. Trail construction is expected to have little effect on the scenic resources.

Effects on Scenic Resources from Minerals Management

Mineral and energy exploration and the potential development of these resources could affect scenic resources in any alternative. Alternatives with recommended Wilderness and Wild River designations would have the least effect on scenic resources. Alternative E, D and F recommend the largest amounts of Wilderness and Wild Rivers and would have the least effect on scenic resources, although, there is little difference among alternatives in the potential to affect scenery.

Effects on Scenic Resources from Timber Management

Newly created openings in existing stands of trees modify the landscape. There would be greater changes where landscapes currently have no visible changes. Alternatives A, B and No Action, anticipate scheduled harvest on about 6,170, 2,340, and 2,960 acres respectively. The existing Scenic Integrity Level for these areas is High. In each alternative, the Scenic Integrity Objective for these lands is Moderate, recognizing that harvest activities will be allowed to reduce the scenic integrity in planned harvest areas.



Timber management may be used as a tool to enhance scenery. Opportunities may be available to create scenic vistas and to do forest restoration. There may be opportunities to increase the types, ages, densities, and size classes of vegetation. The scenic quality would be maintained along all major travelways (roads and trails) on the Forest in all alternatives. All foreground areas along major travelways (roads and trails) are managed for High Scenic Integrity.

Cumulative Effects

Implementation of any of the alternatives is not likely to result in a significant change in the Forest landscape. The Revised Forest Plan will implement new Scenic Integrity Objectives consistent with the theme and emphasis of the alternatives.

The greatest cumulative change in the viewed landscape would most likely occur in Alternatives A, B and No Action. These alternatives have the largest acreage allocated to prescriptions allowing various vegetation treatments.

All alternatives emphasize maintaining a High Scenic Integrity Level along major travelways. Meeting the Scenic Integrity Objectives will help to maintain a key component of regional tourism.

Wild and Scenic Rivers

Introduction

The National Wild and Scenic River System is a system of free-flowing rivers designated by Congress. Wild and Scenic Rivers offer outstanding natural, heritage, or recreational features that are protected for future generations. During forest planning, the Forest Service evaluates rivers that cross National Forest System lands and recommends rivers suitable for inclusion in the National Wild and Scenic Rivers System. Wild and Scenic Rivers are managed to protect their free-flowing characteristics and their particular outstandingly remarkable values.

For a river to be included in the Wild and Scenic Rivers System, it must meet the tests of eligibility and suitability. To be eligible, a river must be free flowing and possess river or river-related values that are judged to be outstandingly remarkable. To be suitable, the benefits of designation should outweigh the disadvantages. It involves considering the land ownership in the area; the land uses that would be affected; public, state, and local government interest in the river's designation; estimated costs; and any other issues raised during the planning process.

Legal and Administrative Framework

- The **Wild and Scenic Rivers of 1968** as set forth herein consists of Public Law 90-542 (October 2, 1968) and amendments there to, establishes the National Wild and Scenic River System, designates the rivers included in the System, establishes policy for managing designated rivers, and prescribes a process for designating additions to the system. The Wild and Scenic Rivers Act also establishes that it is national policy to “preserve... selected rivers or sections thereof in their free-flowing condition to protect water quality of such rivers and to fulfill other vital national conservation purposes.” The Act also states that these rivers “shall be preserved in a free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations.”

The Act recognizes three classifications of protected rivers: (1) wild rivers are “essentially primitive and ...unpolluted [representing] vestiges of primitive America,” (2) scenic rivers are “largely undeveloped, but accessible in places by roads,” and (3) recreational rivers are “readily accessible” and “may have some development” including impoundments or diversions.

- **Forest Service Handbook 1909.12.** Chapter 8 directs the Forest Service to evaluate rivers for inclusion in the National Wild and Scenic River System during planning pursuant to section 5(a) of the Act.

Key Indicators

- Number and miles of rivers recommended for Wild and Scenic designation

Resource Protection Measures

To the extent of Forest Service authority, the following resource protection measures will be applied to the rivers recommended to the National System through this planning effort.

Eligible Wild Rivers:

- **Vegetation** – cutting of trees will not be permitted unless the purpose is to protect or enhance the river's outstandingly remarkable resource values.
- **Water Supply/Flood Control** – All hydroelectric power facilities and major water supply dams or diversions are prohibited.
- **Mining** – New mining claims, mineral leases and mineral material sales are prohibited within the river corridor. Valid claims would not be abrogated. Existing mineral activity must be conducted to minimize surface disturbance, sedimentation, and visual quality. Reasonable access is allowed.
- **Access and Transportation** – New roads are not allowed. Motorized travel on land or water could be permitted, but is generally not compatible with this management area direction. The level of motorized use shall not exceed the level present at the time of designation of the river.
- **Recreation Development** – Major public-use sites (campgrounds, administrative buildings) are located outside the Wild River corridor. Facilities or signs, essential for site protection, may be constructed but must be rustic in design to blend in with the natural character of the area.
- **Utilities** – New transmission lines, gas lines, water lines, communication sites, utility corridors, etc., are discouraged. Where no reasonable alternative exists, additional or new facilities should be restricted to existing rights-of-way. Where new rights-of-way are indicated the scenic, recreational, and fish and wildlife values must be evaluated in the selection of the site.

Eligible Scenic Rivers:

- **Vegetation** – A wide range of silvicultural practices could be allowed, provided that such practices are carried on in such a way that there is no substantial adverse effect on the river and its immediate environment. The river should be maintained in its near natural condition including the long-term scenic character of the river environment.

- **Water Supply/Flood Control** – All hydroelectric power facilities and major water supply dams or diversions are prohibited.
- **Mining** – New mining claims, mineral leases and mineral materials sales that could be allowed are conducted in a manner that minimizes sedimentation and visual impairment. Mining activity must be conducted in a manner that minimizes effects on the outstandingly remarkable values of the river. Existing operations are allowed to continue.
- **Access and Transportation** – New roads could be allowed but should be inconspicuous. Roads may occasionally bridge the river area and short stretches may be conspicuous. Generally, winter motorized recreation use would be allowed. Summer motorized travel on land or water could be permitted, but should the level should be considerate of potential impacts on river values, user demand for such motorized recreation, health and safety to users, and compatibility with the expected recreation experience for a scenic river.
- **Recreation Development** – Modest and unobtrusive cabins and minor lodges could be allowed if they are screened from the river. Structures should be compatible with the river's classification, allow the area to remain natural in appearance, and harmonize with the surrounding environment.
- **Utilities** – New transmission lines, gas lines, water lines, communication sites, utility corridors, etc. are discouraged. Where no reasonable alternative exists, additional or new facilities should be restricted to existing rights-of-way. Where new rights-of-way are indicated the scenic, recreational, and fish and wildlife values must be evaluated in the selection of the site.

Eligible Recreational Rivers:

- **Vegetation** – vegetation may be modified for habitat improvement projects or recreation sites. Openings in forest cover may be present, but should not dominate the landscape. Commercial timber harvest could not be scheduled during the planning period because the potential affect on the outstandingly remarkable values of the river could not be predicted.
- **Water Supply/Flood Control** – All hydroelectric power facilities and major water supply dams or diversions are prohibited.
- **Mining** – New mining claims, mineral leases and mineral materials sales are allowed and existing operations are allowed to continue. Mineral activity must be conducted in a manner that minimizes surface disturbance, sedimentation, pollution, and scenic quality.

- **Access and Transportation** – New roads may be constructed. Motorized travel on land or water may be permitted, prohibited or restricted. Controls will usually be similar to surrounding lands and waters. Generally, winter motorized recreation use will be allowed. Summer motorized recreation can be allowed but will be confined to designated routes or areas. If such use adversely impacts a river's outstandingly remarkable value, then the route or area could be closed or regulated.
- **Recreation Development** – Both minor and major recreation-related facilities may be permitted, if determined to be consistent with the overall intent of the area.
- **Utilities** – New transmission lines, gas lines, water lines, communication sites, utility corridors, etc., are discouraged. Where no reasonable alternative exists, additional or new facilities should be restricted to existing rights-of-way. Where new rights-of-way are indicated the scenic, recreational, and fish and wildlife values must be evaluated in the selection of the site.

Affected Environment

In 1972 the Bureau of Outdoor Recreation established a task force to evaluate free-flowing rivers in Alaska that might qualify for inclusion in the National Wild and Scenic Rivers System. Their statewide preliminary screening of all rivers identified 69 rivers for consideration. Of these 69 rivers, portions of the Copper, Kenai and Russian flow through the Chugach National Forest. Today, 33 Alaska rivers are included in the Wild and Scenic Rivers system. None of the rivers flow through the Chugach National Forest.

All named rivers and glaciers (760+) and many unnamed rivers on the Chugach National Forest were examined and evaluated to identify "outstandingly remarkable" river-related features which would make them "eligible" for inclusion in the National Wild and Scenic Rivers System.

Each stream found eligible for inclusion in the system will be managed to maintain its eligibility until a suitability study is completed. Individual suitability studies will be completed when the Record of Decision is signed.

For each stream found eligible, classification (wild, scenic, or recreational) was made based on the following:

- **Wild** - Rivers or sections of rivers that are free of impoundments, with watersheds or shorelines essentially primitive; generally inaccessible except by trail, with undisturbed landscapes.
- **Scenic** - Rivers or sections or river that are free of impoundments with watersheds or shorelines still largely primitive and undeveloped; can be accessible in places by inconspicuous, well-screened local roads.

- **Recreational** - Rivers or sections of river that are readily accessible by road or railroads and have some degree of development along their shoreline where minor structures are allowed, provided the waterway generally remains natural in appearance.

Table 3-73a displays the results of the inventory and evaluation of streams on the Forest for eligibility.



Table 3-73a: Streams eligible for inclusion in the National Wild and Scenic River System.

River Name	Outstandingly Remarkable Value(s)	Wild	Scenic	Recreational
Bear Creek	Geologic feature	0	0	3.4
Sixmile Creek	Recreational whitewater boating, scenery & visual features	0	5.7	0
East Fork Sixmile Creek	Recreational whitewater boating, scenery & visual features	0	5.6	0
Canyon Creek	Geologic feature	0	6.8	0
Snow River	Scenery & visual features	23.8	0	0
Twentymile River (complex)	Synergistic effects of combined special resource values	14.2	0	0
Palmer Creek	Scenery & visual features	0	10.9	0
Portage Lake & Glacier	Scenery & visual features, recreational values	4.7	2.3	0
Portage Creek	Scenery & visual features	0	0	6.2
Kenai River	Fisheries value	0	0	5.5
Russian River	Fisheries & prehistoric values	14.3	3.0	0
Columbia Glacier	Geologic feature	19	0	0
Coghill River	Fisheries, recreational values, scenery & visual features	11.5	0	0
Cascade Creek	Visual feature (waterfall)	2	0	0
Nellie Juan River	Recreational whitewater boating, scenery & visual features	25.1	0	0
Martin Glacier	Geologic feature	18	0	0
Martin River & Lake	Scenery & visual features, geologic feature, fisheries, recreational values	24.5	1.8	0
Alaganic Slough & unnamed tributary	Historic/cultural values	0	13	0
Copper River - lower (delta complex)	Scenery & visual features, historic and cultural values, fisheries and wildlife values, geologic feature	24.3	1	0
Copper River –upper	Scenery & visual features, recreational values, fisheries values	51.3	0	0
Bering River & Lake	Scenery & visual features, recreational values, fisheries values	6.6	25.2	0
Katalla River	Fisheries values	4.8	7.1	0
Nellie Martin River	Fisheries value	0.4	1.6	0
Number 1 River	Recreational whitewater boating & geologic values.	6.7	0	0
Total river miles by potential classification		251.2	84	15.1
Total miles of eligible river segments		350.3		

Environmental Consequences

General Effects

Appendix D contains the suitability reports for each of the 23 eligible rivers. They describe in detail the anticipated effects of designation and non-designation with respect to the six suitability factors referred to in Section 4 of the Wild and Scenic Rivers Act. One of the factors in the suitability reports is consideration of a range of alternatives for managing the river, whether recommended for designation or not. The 23 rivers, with numerous segments, and three possible classifications, present hundreds of possibilities for structuring alternatives at the Forest Plan level. In some cases, a stream is shown with a Wild classification in one alternative, and a different classification in another, and may not be included (or

reflects fewer miles) in another alternative. Assigning a river to a given alternative was a reflection of the alternative theme and evaluation of suitability factors, recognizing other possible combinations for a particular river might exist.

The Preferred Alternative recommends designation of Sixmile Creek, East Fork Sixmile Creek, Snow River, Portage Creek, Twentymile Creek, Nellie Juan River and Russian River, for a total of 82.4 miles.

Under the No Action Alternative and Alternative A, there would be no recommendation for wild and scenic river designations.

Alternative B recommends designation of the East Fork Sixmile Creek, Sixmile Creek and Snow Rivers, for a total of 35.1 miles.

Alternative C recommends designation of the Cascade Creek, Columbia Glacier, East Fork Sixmile Creek, Nellie Juan River, Palmer Creek, Sixmile Creek and Snow River, for a total of 92.1 miles.

Alternative D recommends designation of the Cascade Creek, Columbia Glacier, East Fork Sixmile Creek, Martin River, Martin Glacier, Nellie Juan River, Palmer Creek, Sixmile Creek and Snow River, for a total of 136.4 miles.

Alternative E recommends designation of the Alaganic Slough, Bering River, Canyon Creek, Cascade Creek, Coghill River, Copper River, East Fork Sixmile Creek, Katalla River, Martin River, Martin Glacier, Nellie Juan River, Nellie Martin River, Palmer Creek, Portage Creek, Portage Lake and Glacier, Russian River, Sixmile Creek, Snow River and Twentymile River, for a total of 315.7 miles.

Alternative F recommends designation of all 350.3 miles of eligible rivers. The complete list of eligible rivers includes Alaganic Slough, Bear Creek, Bering River, Canyon Creek, Cascade Creek, Coghill River, Columbia Glacier, Copper River, East Fork Sixmile Creek, Katalla River, Kenai River, Martin River, Martin Glacier, Nellie Juan River, Nellie Martin River, Number 1 River, Palmer Creek, Portage Creek, Portage Lake and Glacier, Russian River, Sixmile Creek, Snow River and Twentymile River.

Tables 3-73b and 3-73c show the Wild and Scenic River miles by alternative and classification.

Table 3-73b: Wild and Scenic River miles by alternative and classification.

River	Miles	NA	Preferred	Alternative					
				A	B	C	D	E	F
Bear Creek	3.4								3.4 (R)
Sixmile Creek	5.7		5.7 (R)		5.7 (R)	5.7 (S)	5.7 (S)	5.7 (S)	5.7 (S)
East Fork Sixmile Creek	5.6		5.6 (R)		5.6 (R)	5.6 (R)	5.6 (S)	5.6 (S)	5.6 (S)
Canyon Creek	6.8							6.8 (S)	6.8 (S)
Snow River	23.8		5.1 (S)		23.8 (R)	23.8 (S)	23.8 (W)	23.8 (W)	23.8 (W)
Snow River			18.7 (W)						
Twentymile River	14.2		14.2 (S)					14.2 (W)	14.2 (W)
Palmer Creek	10.9					10.9 (R)	10.9 (S)	10.9 (S)	10.9 (S)
Portage Lake	2.3							1.5 (S)	1.5 (S)
Portage Lake								0.8 (W)	0.8 (W)
Portage Glacier	4.7							4.7 (W)	4.7 (W)
Portage Creek	6.2		6.2 (R)					6.2 (R)	6.2 (R)
Kenai River	5.5								5.5 (R)
Russian River	17.3		12.4 (W)					14.3 (W)	14.3 (W)
Russian River			4.9 (R)					3.0 (S)	3.0 (S)
Columbia Glacier	19.0					19.0 (S)	19.0 (S)		19.0 (W)
Coghill River	11.5							11.5 (W)	11.5 (W)
Cascade Creek	2.0					2.0 (W)	2.0 (W)	2.0 (W)	2.0 (W)
Nellie Juan River	25.1		9.6 (W)			25.1 (S)	25.1 (S)	25.1 (W)	25.1 (W)
Martin Glacier	18.0						18.0 (W)	18.0 (W)	18.0 (W)
Martin River and Lake	24.5						24.5 (W)	24.5 (W)	24.5 (W)
Martin River and Lake	1.8						1.8 (S)	1.8 (S)	1.8 (S)
Alaganic Slough	13.0							13.0 (S)	13.0 (S)
Copper River Lower	25.3							24.3 (W)	24.3 (W)
Copper River Lower								1.0 (S)	1.0 (S)
Copper River Upper	51.3							51.3 (W)	51.3 (W)
Bering River and Lake	31.8							6.6 (W)	6.6 (W)
Bering River and Lake								25.2 (S)	25.2 (S)
Katalla River	4.8							4.8 (W)	4.8 (W)
Katalla River	7.1							7.1 (S)	7.1 (S)
Nellie Martin River	0.4							0.4 (S)	0.4 (S)
Nellie Martin River	1.6							1.6 (W)	1.6 (W)
Number 1 River	6.7								6.7 (W)
Total	350.3	0.0	82.4		35.1	92.1	136.4	315.7	350.3

Table 3-73c: Wild and Scenic River miles by river by alternative and classification.

River	Miles	NA	Preferred	Alternative					
				A	B	C	D	E	F
Recreational	15.9	0	22.4	0	35.1	16.5	0	7.0	15.9
Scenic	57.0	0	19.3	0	11.3	73.6	68.1	83.8	99.2
Wild	277.4	0	40.7	0	23.8	2.0	68.3	224.9	235.2
Total	350.3	0	82.4	0	35.1	92.1	136.4	315.7	350.3

Direct and Indirect Effects

The types and amounts of activities and changes acceptable within a river corridor depend on whether it is recommended as a Wild, Scenic or Recreational River. Because Forest Plan alternatives effects are not site specific, it is not possible to describe precisely how an individual stream may be affected by future projects, since the exact locations and designs of those projects are not yet determined. It is possible, however, to describe and to display the general

effects of various management activities on the eligibility and potential classification of rivers. These potential effects are described below.

In Appendix D, the effects of alternatives on each eligible river are described in more detail through the individual river suitability studies. Specific kinds of Forest activities and uses can affect the classification or eligibility of rivers. These are described in the next few paragraphs:

- **Timber Harvesting** - Timber harvesting and associated roads and log transfer facilities can have a major effect on the potential for a river to be considered eligible, and, if eligible, which classification it meets. Extensive, highly visible, and ongoing timber harvesting within a river corridor could result in the river becoming ineligible for any classification. Where timber harvest maintains the natural appearance of the river corridor as seen from the river and its banks, the river may qualify for Scenic classification; more alteration may still be acceptable for a Recreational classification. Vegetation management practices must maintain free-flow and the outstandingly remarkable values of the river.
- **Water Project Development** - Any major impoundment for water storage or hydroelectric power would cause a river segment to be ineligible. In the case of hydroelectric proposals that meet the criteria for licensing by the Federal Energy Regulatory Commission (FERC), the Forest Service is not the permitting agency, and serves only in an advisory role to FERC. Depending on their visibility and extent, low dams and diversions, penstocks, transmission lines and other facilities may affect the classification of the river. Where these facilities are visually subordinate, the river may be classified as a Recreational River. Where such features dominate the landscape, the river is likely to be ineligible.
- **Minerals** - Large-scale mining activity could result in an eligible river becoming ineligible, or result in its being eligible only in the Recreational classification. Some types of mineral exploration may not affect the classification of a river as Scenic or Recreational, as long as the outstandingly remarkable values and classification objectives are maintained. The No-Surface Occupancy stipulation would protect Scenic and Recreation Rivers while at the same time allow oil and gas leasing and extraction by directional drilling. Wild Rivers are withdrawn from mineral entry.
- **Recreation Development** - Development of trails, hike-in (or fly-in or boat-in) cabins, and campsites would not likely affect the Wild classification of a river, nor would continuation of traditional access by motorized equipment. In addition to the above, developments such as launch sites and modest recreation sites would not affect the Scenic classification, as long as the development did not greatly alter the natural character. Development of major

recreation sites, boat launches, other visitor facilities, would generally cause a river to meet only the Recreational classification.

- **Roads** - Any construction of roads in the river corridor would eliminate that segment of river from classification as a Wild River. Even roads outside of the river corridor might be incompatible with Wild classification, if they detracted from the primitive character or an outstandingly remarkable value, especially scenic values. Construction of roads and bridges that occasionally cross or reach the river would not affect the classification of a Scenic River, assuming such roads are infrequent and relatively inconspicuous. In broad valley settings, a major road might be compatible with the Scenic classification due to the scale of the landscape. Construction of a major highway or extensive road system could limit a river to the Recreational classification.
- **Fish Improvement Projects** - Constructed fish passes and other structures associated with improvement of fish habitat are possible in all classifications, if determined on a case-by-case basis that the facility does not alter the free-flowing character of the river or conflict with the outstandingly remarkable values. Developments in the Wild classification would need to be compatible with the primitive character of the river area. Some fish improvements typical in Alaska may not be allowed or may be more expensive to build on a Wild River. Construction of an on-stream fish hatchery would be compatible only with the Recreational classification.
- **Wildlife Habitat Improvements** - Manipulation of vegetation or improvements such as fencing or artificial nest structures, would likely be incompatible with Wild classification. They might be compatible with a Scenic designation, as long as the undeveloped character was maintained. Most improvements would be acceptable in a Recreational classification, consistent with the outstandingly remarkable values.

Conversely, designation of a river as a component of the National Wild and Scenic Rivers System can affect the management of various resources. Generally, the corridor width for designated rivers is one-quarter of a mile on each side of the river. Final boundaries can and do vary from this minimum, but generally follow the $\frac{1}{4}$ mile guideline. Congressional designation as a Wild, Scenic or Recreational River in Alaska might result in the establishment of a Conservation System Unit as defined by ANILCA. Where rivers are designated in Wilderness, the most restrictive provisions of the two laws would apply.

Congressional designation as a Wild River results in the area being withdrawn from mineral entry. Scheduled commercial timber harvest is not allowed, and outputs of timber from tentatively suitable forestlands are foregone. Construction of major recreation facilities, roads, power lines and other features are not allowed. However, if designated as a Conservation System Unit under ANILCA,

Title XI defines a process whereby transportation and utility corridors may be allowed. The potential for hydroelectric power generation is also foregone. Within Wilderness, the President of the United States may authorize water resource projects but no such provision exists in the Wild and Scenic Rivers Act. Designation under the Wild and Scenic Rivers Act would provide an added degree of protection, requiring congressional approval. Some opportunities for fish and wildlife habitat enhancement would also likely be foregone if they would impede or divert water flow or otherwise adversely affect the outstandingly remarkable characteristics of the river. Congressional designation would not affect the rights of landowners within a Wild River area, except perhaps access constraints. Other restrictions could result from enabling legislation if zoning or other regulatory changes were enacted by local governments through their public processes. Designation, particularly where tributary streams, important visual features, or outstandingly remarkable values lie outside the ¼ mile corridor, could affect the management of lands adjacent to a Wild River by requiring more constraints or complimentary Land Use Designations. The Wild and Scenic Rivers Act also requires that upstream water projects may not unreasonably diminish the scenic, recreational, fish or wildlife values within the designated river nor can a downstream project back water into the designated segment.

Congressional designation as a Scenic River places significant constraints on the management of timber in the river corridor, although timber harvest generally out of view of the river or recreation sites could occur. The area is not withdrawn from mineral entry, but costs of mining could increase as a result of standards to maintain identified values and Scenic River objectives. The potential for hydroelectric power generation is foregone. Construction of major recreation facilities could be limited. Roads, while allowed, could be more expensive as design seeks to minimize the visual impact and the number of bridge crossings. Effects on management of adjacent lands would be less than for a Wild River, although activities affecting sensitive visual features may be constrained resulting in increased cost or reduced output.

Congressional designation as a Recreational River places fewer constraints on management and development activities, although the potential for new diversions and hydroelectric power generation is foregone. Timber may be harvested, although visual constraints may increase the cost of timber harvest and reduce outputs.

Congressional designation of a system of Wild and Scenic Rivers has many positive effects. The undeveloped nature of the region presents a unique opportunity to identify the very best candidates for addition to the system. The opportunity presents itself to represent a wide range of outstanding values for a variety of geological and ecological settings, on a large geographic scale. A system of rivers would complement the conservation units already designated by Congress in Southeast Alaska, and could recognize the unique social, economic, and development needs through the enabling legislation, as was done in ANILCA.

A system of Wild and Scenic Rivers could open up new tourism marketing opportunities, as is often the result of the attention focused on congressionally designated areas. On a regional scale, this could be used as a tool to capture a larger segment of visitors to further stimulate tourism and the economies of the area. On a local scale, certain communities or service providers could promote different areas and activities, and attract specific market segments of users. Opportunities could vary from primitive experiences to those in more developed settings, and encompass a variety of activities. Promotion of a designated river might be the vehicle for a successful operation. The down side of this marketing opportunity might be attracting too many people (in some people's opinion), resulting in user conflicts such as for subsistence use, and more regimented managerial controls.

Cumulative Effects

Currently, Alaska has 33 designated Wild and Scenic Rivers totaling 3,284 miles. This represents nearly 1/3 of the total number of river miles in the National System. If any of the 23 eligible rivers on the Chugach National Forest (350.3 miles) were designated some increases in recreation use and tourism could be expected to occur. However, taken in a regional context, changes in recreation use, tourism and local income would probably not be measurable.

Effects of non-designation would likewise have little regional significance on recreation use or tourism. Non-designation might, however, represent a lost opportunity to protect river characteristics that are unusual in the region.

Non-designation would allow consideration of full range of alternatives for various resource activities. These include fish improvement projects, recreation site development, transportation and utility corridors, mineral exploration and development, and timber harvest, consistent with the management area prescription they fall within. This could result in increased resource outputs, cost savings, and fewer resource impacts as a result of having more options. Eligible rivers that are allocated to the Category 1 or 2 management area prescriptions are likely to retain their eligibility and potential classification. However, unless they are in Wilderness, the river corridors remain open to mineral entry and the development of water resources. In addition, some of the Category 2 prescriptions allow or conditionally allow consideration for development of transportation and utility corridors. Since proposals for these activities cannot be predicted with any degree of accuracy, their potential effect on the eligible rivers was not analyzed. Appendix D does identify where these potential developments are more likely to occur.

- **Rivers Recommended for addition to the National System**

Rivers that are recommended for designation would be managed according to the Wild and Scenic River Management Area prescriptions at the recommended classification. These prescriptions, along with the Forestwide standards and guidelines, would ensure that the free-flow, water quality and the outstandingly remarkable values remain. Key standards and

guidelines include those for Soil, Water, Fish, Scenery, and Recreation and Tourism.

The Preferred Alternative recommends designation of East Fork Sixmile Creek, Sixmile Creek, Snow River, Portage Creek, Twentymile Creek, Nellie Juan River, and Russian River, for a total of 82.4 miles. These rivers would be recommended to the Chief of the Forest Service by the Regional Forester as part of the approval of the Revised Forest Plan.

This would be a preliminary administrative recommendation that will receive further review and possible modification by the Chief of the Forest Service, Secretary of Agriculture, and the President of the United States. Congress has reserved the authority to make final decisions on designation of rivers as part of the National Wild and Scenic Rivers System.

The rivers recommended in the Revised Forest Plan would be managed to retain their free-flowing character and outstandingly remarkable values at their recommended level of classification, within the existing authorities of the Forest Service. The final outcome for designation of these rivers rests with Congress.

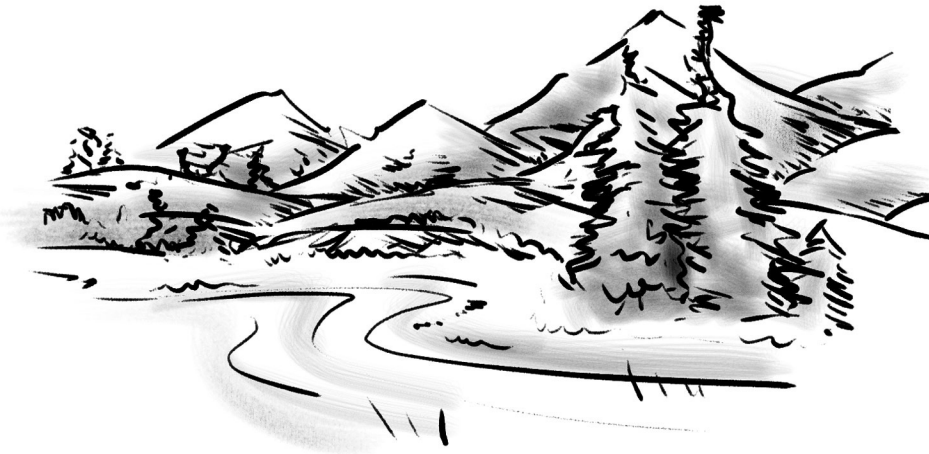
- **Rivers not recommended and within a management area prescription that will generally protect the river's free-flow, water quality and outstandingly remarkable values.**

The Preferred Alternative does not recommend designation of Canyon Creek, Palmer Creek, Portage Glacier and Lake, Kenai River, Columbia Glacier, Coghill River, Cascade Creek, Martin Glacier, Martin River and Lake, Alaganic Slough, Copper River, Bering River and Lake, Katalla River, Nellie Martin River and Number 1 River. These rivers are located within Category 1 and 2 management area prescriptions including Backcountry, Fish and Wildlife Conservation, Recommended Wilderness, Wilderness Study Area, 501(b) - 2 and 501(b) - 1. Although hydroelectric power facilities and major water supply dams, fish projects or diversions are not prohibited they are generally not compatible with the themes and management intent of Category 1 and 2 management area prescriptions.

- **Rivers not recommended and within a management area prescription that is likely incompatible with protecting a river's free-flow, water quality and outstandingly remarkable values.**

Bear Creek is located within the Recreation, Fish and Wildlife Management Area prescription that allows a variety of multiple-use activities. The outstandingly remarkable value of the river is the discovery of the largest gold nugget in the State of Alaska. This

particular nugget is no longer in the river and the Recreation, Fish and Wildlife Management Area prescription does not withdraw the area from mineral entry. Thus, if additional large gold nuggets remain in the River they would not be protected from removal. The level of mining activity that occurs on Bear Creek will not ensure protection of water quality and free-flow.



Wilderness

Introduction

The Wilderness Act of 1964 established the National Wilderness Preservation System. It mandates that Wilderness areas be “.... administered for the use and enjoyment of the American people in such a manner as will leave them unimpaired for future use and enjoyment as wilderness.” Currently, there is no designated Wilderness on the Chugach National Forest.

The Forest Service is required to inventory, evaluate, and consider all roadless areas for possible inclusion in the National Wilderness Preservation System (see “Roadless,” this Chapter). In 1978, the Chugach Forest completed an inventory of unroaded areas as part of the national process called RARE II. At that time the Administration's proposal was to designate 669,500 acres on the Chugach National Forest as Wilderness. Three additional areas were recommended for Wilderness in the RARE II process. These three areas, the Two Indians drainage west of Resurrection Creek, and the Tonki Cape and Devil Paw area on Afognak Island are no longer part of the Chugach National Forest. Two areas, the Resurrection Roadless Area, and the southern portion of the Eastern Kenai Mountains Roadless Area around Snow River, were designated as non-Wilderness roadless. All other areas on the Forest evaluated for roadless characteristics (3,301,800 acres) were put into a further planning category to be evaluated during Forest Planning (see Current Management in this section).

In 1980, the Alaska National Interest Lands Conservation Act (ANILCA) added 2,156,000 roadless acres to the Forest. ANILCA did not establish any Wilderness on the Chugach National Forest. However, Section 704 identified the Nellie Juan-College Fiord area and required the Forest Service to study the area and make a Wilderness recommendation. Because of the unique situations and established uses in Alaska, ANILCA also provided a number of important exceptions to the management of designated Wilderness in Alaska, such as traditional motorized use.

Legal and Administrative Framework

- The **Wilderness Act of 1964** – establishes the framework for wilderness management and for designating additional Wilderness.
- **Alaska National Interest Lands Conservation Act (ANILCA) of 1980** - provides for motorized access and mechanized equipment related to traditional activities, subsistence activities, equipment use related to the taking of fish and wildlife, administrative needs, and activities in Alaska wilderness. It also established the Nellie Juan-College Fiord Wilderness Study Area.

- **Planning Regulations (36 CFR 219.17)** state: “Unless otherwise provided by law, roadless areas within National Forest System shall be evaluated and considered for recommendation as potential Wilderness areas during the Forest Planning process.”

Key Indicators

- Acres recommended for Wilderness designation

Resource Protection Measures

Areas recommended for Wilderness designation in the Record of Decision (ROD) and the Nellie Juan-College Fiord Wilderness Study Area will be managed to maintain their existing wilderness character and potential for inclusion in the National Wilderness Preservation System until congressional action on the recommendations and the Wilderness Study Area. Any recommendation for Wilderness designation is a preliminary administrative recommendation that will receive further review and possible modification by the Chief of the Forest Service, the Secretary of Agriculture, and the President of the United States (FSM 1923.11). The Congress has reserved the authority to make final decisions on Wilderness designation.

Affected Environment

Inventory and Evaluation Process

In order for a parcel of land to qualify for evaluation as a potential addition to the National Wilderness Preservation System, it must meet the minimum standards set by Congress in the Wilderness Act of 1964. These standards require an area to generally appear to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; to have outstanding opportunities for solitude or a primitive and unconfined type of recreation; to have at least 5,000 acres of land or in sufficient size as to make practicable its preservation and use in an unimpaired condition; and may also contain ecological, geological or other features of scientific, educational, scenic or historic value. An area is recommended as suitable for Wilderness if it met the test of capability, availability, and need.

The 1996 roadless inventory conducted by the Forest identified 16 roadless areas that fairly closely follow the roadless divisions used in RARE II. Areas within ¼ mile of improved roads, including the state highways, Palmer Creek Road, Snug Harbor Road, Montague Island Road, Copper River Highway, or other roads maintained for travel by standard passenger type vehicles were excluded from roadless evaluation. Also excluded were small “donuts” created by roads surrounding or almost completely surrounding small parcels of land. Private land and state land within the roadless area boundary was not evaluated. Lands selected but not yet conveyed to either the state or Native corporation were included in the evaluation. Roadless areas on the Chugach were mapped

using the criteria listed in the Forest Service Handbook 1909.12 and acreages were updated on February 14, 2000, using the Forest's GIS corporate database.

Individual reports on each roadless area have been prepared (FEIS, Appendix C). Major topics in the reports include the area's relationship to other planning efforts; a description of the ecosystems involved; history, soils, fish, wildlife, and recreation resource uses and patterns; current use and management; appearance, external influences, natural integrity, opportunity for solitude, special features, resource potentials and relationship to communities and other roadless and wilderness areas (36 CFR 219.12(f)(1)). The reports also show how the roadless areas would be managed under each alternative.

In accordance with the CNI Settlement Agreement, Chugach Alaska Corporation has been granted an easement to construct a road from the Copper River Highway to their lands near Carbon Mountain. The 30-mile road would cross through the Bering Lake Roadless Area. The CNI Settlement Agreement also provided for an access route from their lands toward a marine terminal (Katalla route). The easement areas (1/4 mile on either side of the roads) were not included in the Bering Lake Roadless Area acreage.

The Montague Island Roadless Area had a 37-mile special use road that was not open to the public. The road has been closed and obliterated, and the area is now included as part of the roadless area.

Currently about 99 percent of the Forest or 5,434,710 acres out of 5,491,580 total acres are inventoried as roadless and meet the requirements for evaluation as wilderness. Except for the areas identified as guaranteed access into the Bering River Coalfields under valid existing rights, all areas inventoried as roadless in the current inventory are available for Wilderness designation or continued management for their roadless character. Table 3-74 displays the 16 roadless areas, their acreage and any special designations applicable to the area. The roadless areas are displayed in Figure 3-73.

Current Management

Consistent with congressional intent for the 2,115,000-acre Nellie Juan-College Fiord Wilderness Study Area (WSA) 1984 Forest Plan direction is to manage the area to maintain its presently existing wilderness character (1980) and potential for inclusion in the National Wilderness Preservation System. Because of the conveyance of some lands in the WSA to the State of Alaska and Alaska Native corporations, only 1,746,970 acres are currently available for Wilderness recommendation or designation.

The 1984 Forest Plan direction recommended 1,655,000 acres of the Study Area for Wilderness designation. The 1984 Forest Plan also recommended about 48,000 acres of roadless lands outside the WSA for Wilderness designation. Current direction is to manage these lands to maintain their presently existing wilderness character (1980) and potential for inclusion in the National Wilderness Preservation System.

Table 3-74: Chugach National Forest roadless areas.

Roadless Area	Roadless Acreage	Special Designation or 1984 Forest Plan Recommendation
01 Resurrection	224,460	Designated non-Wilderness roadless in RARE II, not evaluated for Wilderness in 1984 Forest Plan.
02 Boston Bar	53,590	No special designation.
03 Johnson Pass	153,020	No special designation.
04 Kenai Lake	212,960	No special designation.
05 Kenai Mountains	306,580	48,220 acres recommended for Wilderness designation (Forest Plan).
06 Twentymile	198,560	No special designation.
07 Nellie Juan	734,100	Wilderness Study Area (ANILCA).
08 Prince William Sound Islands	119,520	Wilderness Study Area (ANILCA).
09 College Fiord	1,129,610	Wilderness Study Area (ANILCA)
10 Fidalgo-Gravina	316,330	17,800 acres managed with primary purpose conservation of fish and wildlife and their habitat.
11 Montague Island	205,270	No special designation.
12 Hinchinbrook- Hawkins Islands	144,470	No special designation.
13 Copper River Wetlands	88,650	73,600 acres managed with primary purpose conservation of fish and wildlife and their habitat.
14 Sheridan Glacier	231,810	153,500 acres managed with primary purpose conservation of fish and wildlife and their habitat.
15 Bering Lake	966,240	964,940 acres managed with primary purpose conservation of fish and wildlife and their habitat. Two rights-of-way to access private land under CNI agreement.
16 Tasnuna River	349,540	Managed with primary purpose conservation of fish and wildlife and their habitat.
Total	5,434,710¹	

¹ Note: This is a –4,290 acres (0.08 percent) difference in the Forest Service Roadless Conservation FEIS acres for the Chugach National Forest. This is due to a slight difference in the roadless categories used in the FEIS.

Environmental Consequences

The decision to make an area a Wilderness can only be made by Congress. Once an area is designated as Wilderness, by Congress, only an act of Congress can change the designation and the management of the area would not be reconsidered in the next Forest Plan revision. Congress typically designates slightly different requirements for Wilderness in Alaska than for other states, such as it did in enacting ANILCA.

The most significant change from designation of Wilderness is that mineral exploration and development would be prohibited, subject to then existing rights (see also Minerals in this Chapter). Other uses and activities would not change much from what is occurring today. Without designation as Wilderness, there would likely be some small, incremental development in the area over time. Although the overall management would not change significantly if Wilderness were designated, some people fear that Wilderness designation would lead to greater restrictions on their traditional uses of the land. Foregoing Wilderness designation would have little effect on the environment. Most all opportunities to designate these areas as Wilderness, in the future, would remain (see Roadless Section in this chapter and Appendix C).

Table 3-75 displays the acres of recommended Wilderness by alternative. Table 3-76 shows the acres of recommended Wilderness for each roadless area, by alternative.

Table 3-75: Recommended Wilderness by alternative (M acres).

	Alternative							
	No Action	Preferred	A	B	C	D	E	F
Recommended Wilderness	1,637	1,866	0	871	1,347	2,590	3,392	4,456

Alternatives F, E and D recommend the highest amount of roadless lands for Wilderness designation. Alternative F recommends 82 percent, Alternative E 62 percent and Alternative D 48 percent. The Preferred Alternative recommends 34 percent of the roadless land for Wilderness classification. Alternatives C and B recommend the least amount of Wilderness for designation. Alternative C recommends 24 percent and Alternative B, 16 percent. Alternative A does not recommend any Wilderness. The No Action Alternative recommended 30 percent.

Recommending or designating an area as Wilderness would have no effect on adjacent lands. However, inholdings would be more difficult to access. The No Action Alternative contains 11,900 acres of private isolated lands (no access from outside the recommended Wilderness or from the coastline), Alternative E, 11,300 acres and Alternatives D and F, 16,100 acres. There would be no isolated lands under the Preferred Alternative and Alternatives A, B and C.

Although the number of acres recommended for Wilderness designation in the Nellie Juan-College Fiord Wilderness Study Area varies by alternative, the Forest

Service will continue to manage the entire Wilderness Study Area for its wilderness values until Congress considers the Wilderness Study. After Congress considers the Wilderness Study, the Revised Forest Plan will be amended to provide management direction for the areas not designated as Wilderness by Congress. The Preferred Alternative displays recommended prescriptions after Congress considers the Wilderness Study.

The effects analysis for the Wilderness Study Area displays the effects of the alternative's recommended prescriptions. The actual effects until Congress considers the Wilderness Study results will be the same in all alternatives, which is generally displayed in Alternative F, except that the area is not closed to mineral exploration and development. For effects on roadless areas if not recommended or subsequently designated as Wilderness, see the "Roadless Area" section of this Chapter.

Table 3-76: Recommended Wilderness by alternative by roadless area (M acres).

Roadless Area	Alternative							
	No Action	Preferred	A	B	C	D	E	F
Resurrection						140	169	168
Boston Bar							45	46
Johnson Pass							6	6
Kenai Lake							94	103
Kenai Mt.	48					115	101	227
Twentymile								113
Nellie Juan	684	545		392	448	607	693	694
PWS Islands	26	47		26	26	102	119	119
College Fiord	879	832		453	469	599	828	1,099
Fidalgo-Gravina							18	18
Montague Island							6	202
Hinchin-Hawkins					91	101	54	130
Copper Wetlands							36	69
Sheridan Glacier							61	165
Bering Lake		442			340	926	947	947
Tasnuna River							115	350
Total	1,637	1,866	0	871	1,374	2,590	3,392	4,456

Direct and Indirect Effects

Effects of Wilderness Designation on Heritage Resource Management

If archaeological or other cultural resources exist in any of the recommended Wilderness, these resources would be given additional protection through Wilderness designation since ground-disturbing activities are limited.

Effects of Wilderness Designation on Biodiversity Management

Wilderness management focuses on allowing natural conditions to prevail, usually by eliminating or limiting human intervention. Therefore, the overall effect of Wilderness designation would be to provide additional protection and maintenance of natural biological diversity.

Effects of Wilderness Designation on Fire Management

Natural fires would be allowed to play their natural ecological role. Fire control techniques would minimize ground disturbance. Natural barriers would be used to confine or contain fire where possible.

Fire management options on the Chugach National Forest have been mapped in accordance with direction in the "Alaska Wildland Fire Management Plan", 1998. This map is included on the CD-ROM version of the Revised Forest Plan. Mapped Fire Management options include: Critical; Full; Modified; and, Limited.

Most of the areas recommended for Wilderness designation are mapped as "Limited" or "Modified" Fire Management options. The "Limited" option recognizes areas where the cost of suppression may exceed the value of the resources to be protected, the environmental impacts of fire suppression activities may have more negative impacts on the resources than the effects of the fire. The intent of the "Modified" option is to provide a higher level of protection when fire danger is high. When fire danger is low there would be less of a suppression response.

Effects of Wilderness Designation on Insects and Disease Management

Natural outbreaks of insects and disease would be allowed to proceed naturally. However, they may be controlled if they threaten adjacent lands or resources.

Effects of Wilderness Designation on Vegetation Management

Ecological processes would be permitted to operate naturally. Vegetation management manipulation would be prohibited.

Effects of Wilderness Designation on Threatened, Endangered, and Sensitive Species Management

Populations of federally listed threatened and endangered species located within any designated Wilderness would be protected from potential development. Management activities are allowed to prevent loss of species.

Effects of Wilderness Designation on Fish and Wildlife Habitat Management

Habitat manipulation for wildlife would be prohibited unless it is specifically needed to restore natural ecosystem conditions or to perpetuate federally listed threatened or endangered species. Habitat manipulation for fish would be allowed, but it would have to blend with the landscape.

Effects of Wilderness Designation on Lands

Reasonable access would be granted to state and private lands, and to valid mining claims (ANILCA, Section 1110(b)).

Utility corridors and communication sites are not compatible with Wilderness objectives. Existing sites may be retained. Under ANILCA (Section 1310(b)) new sites could be permitted but they would have to blend with the landscape.

Effects of Wilderness Designation on Recreation Management

Managing the recreation resource for a primitive experience is a primary management activity in wilderness. Hiking, skiing, hunting, fishing, camping, and related low impact uses by the public would be allowed to continue. Trails and other appropriate wilderness facilities would be constructed and maintained by

primitive methods. Motorized equipment is prohibited except for fixed-wing airplanes, motorboats, and snowmachines for traditional activities as provided by ANILCA, Section 1110.

The public use and maintenance of cabins would continue. A limited number of new cabins or shelters could be constructed, if necessary, for public health and safety (ANILCA Section 1315 (c)). Temporary hunting and fishing facilities could continue to be used and new facilities could be constructed (ANILCA, Section 1316(a)).

Effects of Wilderness Designation on Subsistence Management

Wilderness would have no effect on subsistence management (ANILCA, Title VIII).

Effects of Wilderness Designation on Timber Management – Wilderness would not be available for timber harvest. Table 3-77 lists the approximate amount of tentatively suitable timber acres in recommended Wilderness by roadless area by alternative.

Effects of Wilderness Designation on Minerals Management – Subject to existing rights, on valid claims, designated Wilderness would be withdrawn from all forms of mineral entry (see Table 3-95 in Minerals section).

Table 3-77: Summary of tentatively suitable timber acres recommended for Wilderness by roadless area by alternative (M acres).

Roadless Area	Alternative							
	No Action	Preferred	A	B	C	D	E	F
Resurrection						1.6	2.3	2.7
Boston Bar							0.9	1.3
Johnson Pass								
Kenai Lake							4.0	4.1
Kenai Mt.						1.5	1.0	3.3
Twentymile							2.4	2.3
Nellie Juan	13.1	11.4		5.6	9.0	10.4	13.1	14.3
PWS Islands	2.3	7.2		2.3	2.4	15.6	17.8	17.8
College Fiord	22.9	13.9		23.3	32.3	44.4	49.8	49.9
Fidalgo-Gravina								
Montague Island							1.3	
Hinchin-Hawkins					20.3	21.7	12.4	28.5
Copper Wetlands								0.2
Sheridan Glacier								6.2
Bering Lake		34.6				74.1	73.6	73.7
Tasnuna River								
Total	38.3	67.1	0	31.2	64.0	169.3	178.6	204.3

EVOS Acquisition Areas – No EVOS-acquired lands are recommended for Wilderness designation.

Wild and Scenic Rivers – Wild River classification would prohibit any activities that would affect the free-flowing nature of the river, including the impoundment of water.

ANILCA 501(b) Lands – Wilderness designation would be compatible with the conservation of wildlife and fish on ANILCA 501(b) lands. The Sheridan Glacier, Bering Lake, and Tasnuna River Roadless Areas are partly within ANILCA 510 (b) lands.

Cumulative Effects

Designation of Wilderness would add to the National Wilderness Preservation System where ecological processes are largely unaffected by human influences. This could positively affect biological diversity by providing a larger areas where ecological processes are largely unaffected by human influences.

The Chugach National Forest is almost surrounded by land that is managed for its wilderness or roadless values. These areas include Chugach State Park, Kenai Fjords National Park, Kenai National Wildlife Refuge (contains two designated Wildernesses), and Wrangell-Saint Elias National Park and Preserve (largely designated Wilderness). Many other lands are roadless because of the their topography. As tourism and populations increase around Anchorage, there would be increased pressures on wilderness areas for a variety of uses. However, much of the Chugach would remain roadless because of its rugged topography and glacier features.

There are currently 58 million acres of designated Wilderness in Alaska. Within the United States, the Forest Service manages over 400 Wilderness areas totaling over 35 million acres (USDA Forest Service, 1998a). Within Alaska, there are 19 designated national forest Wildernesses totaling 5,788,657 acres. All of these areas are located on the Tongass National Forest in Southeast Alaska.

Cumulative effects resulting from Wilderness designation would include present and future loss of commodity production (principally wood products and minerals) and the loss of some fish and wildlife habitat enhancement opportunities. Some recreational pursuits in the future could be affected by some of the limitations prescribed by wilderness management, however designation would provide outstanding opportunities for recreation activities relying on a primitive setting.

